GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

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STRAY STRAWS FROM DR C. C. MILLER

A SPRAYER, one that throws a much coarser spray than the Faultless, would be a good thing to fill combs with syrup.

"IS HONEY a vegetable or animal product?" is a question asked on page 317. Perhaps the right answer to that question is that it is both.

I DON'T BELIEVE that one colony in fifty will swarm if managed by J. F. Teel's plan, p. 315. But it isn't a very good plan for comb honey.

EDITOR ABBOTT "is now thoroughly convinced that a cluster of bees with full honey-sacs will not freeze." That depends. If the cluster is large enough, it will not freeze. If small enough, it will most certainly freeze whenever it's cold enough.

J. J. COSBY strikes the right note when he advocates rearing good drones as well as queens, p. 303; but wouldn't it be better, for the sake of avoiding in-breeding, friend Cosby, to feed up for drones a colony different from the one that is fed for queens?

FRIEND A. I. ROOT, here are my heartiest thanks for that talk beginning page 322. There are good people who have faith in Dowie, Electropoise, and all that, and you may do nothing for them; but you may warn others away from the whirlpool.

VERY SOON it will be time again for queen-rearing, and I hope Messrs. Brice, Hutchinson, and Taylor will make close observation to see whether in any case bees make the mistake of choosing larvæ more than three days old from which to rear a queen, so long as they have younger larvæ present.

DECIDEDLY, YES; that short cleat in connection with the hand-hole is a great improvement over the hand-hole alone. The cleat alone is better than the hand-hole alone, and the combination is better than either one alone. But some will prefer a longer cleat. [Every one to his likes and dislikes. I have said this several times before, and I think it is a good motto for a supply-dealer to adopt. The one who prefers to use old-style sections, for instance, should not lash himself into fury because the other fellow prefers and admires plain sections.—ED.]

DEEP CELLS are not a complete preventive of eggs in a super, as J. A. Green says, p. 303, but a deterrent, and the deeper the cells the more they deter. When he put 7 frames instead of 8, that made the cells only about $\frac{1}{10}$ inch deeper. With 6 frames in place of 8, making the cells about $\frac{1}{4}$ inch deeper, it would be a desperate case that would make the bees gnaw down the cells.

IF YOU START to test the drug formalin for foul brood, you might try izal, which S. Simmins, editor of *Bee Chat*, strongly insists is a success. [The trouble is, doctor, we have no foul brood, and we do not want any here at Medina to test either drug by; but there are some of our unfortunate readers who, disliking to destroy good frames of brood, might feel disposed to give one or both a trial.—ED.]

HENRY ALLEY thinks increasing the size of cell-cups will not increase the size of queens, p. 308. How could it make a difference, when already the queen has more room than she needs in the ordinary cell? [Henry Alley is quite right. I feel like kicking myself for letting a correspondent suggest that an enlargement of the cell would make larger queens, without a protest. I knew better.—ED.]

THE HOFFMAN FRAME, p. 321, is compared with the loose-hanging frame to the advantage of the former; but please remember that the advantages there claimed are not confined to the Hoffman, and that you can have a better frame than it, and still have the advantages of the self-spacer. [A better frame, perhaps, for your locality, doctor. I suppose you refer to the nail-spaced frame that you use. Friend Davenport would not like it nearly as well, possibly, even if he lived in Marengo. But Hoffman frames have certain features that even your nail-spaced frames do not have. Every one to his liking.—ED.]

J. A. GREEN will pardon me for saying that he uses two illustrations, page 302, to prove travel-stain, that hardly apply. Bees on the

window destroy the clearness of the glass by means of the gum secreted and brought into use when, *and only when*, the surface is too smooth for their claws to hold. On the comb, the claws of the feet catch, so no gum is left. "Sticky dirt" is found outside a hive where bees are cleaning the honey out of a hive, it is true; but why should their feet be so extremely dirty at that particular time? I *think* the feet have nothing to do with it, but that the bees so cram themselves with honey that they drop a small amount of feces on leaving the hive.

E. E. McCOY and the editor don't agree as to the difficulty of getting wide frames out of a hive, p. 315. It all depends. I once emptied a hive in which the wide frames filled the hive *full*, and it pretty nearly beat me. With a space of ⅛ inch beside the frames, it's as easy to take them out as to take out closed-end brood-frames. [Not quite, to my notion. Wide frames filled with sections have many points of contact; whereas closed-end frames have contact only along the end-bars. The worst sticking with the old wide frames that we had was the sticking of the sections to the separator; the sections of one wide frame sticking to the separators of the wide frame next to it. But I have no quarrel with those who wish to use those antiquated devices. I know some people who will use coal oil when they could get electricity at the same price for lighting, if they figure the time for caring for lamps. The world is full of such people, and they are good people too.—ED.]

DON'T FEEL too disappointed if "bleaching the surface of travel-stained comb honey" doesn't prove an easy task. Remember that "travel-stain" is an utter misnomer, that the feet of the bees have nothing to do in the case, that the discoloring is mainly from particles of old comb from below, and that to get rid of it you must remove part of the capping itself. [That is true; the discoloration does go clear through the capping of so-called travel-stained honey. But Byron Walker says positively he has a method for making those combs white. How do you know he has not some scheme of whitewashing that covers up those dirty faces just as you would the unpainted boards on the back of your house with white paint? I am craning my neck to see what Mr. Walker's *modus operandi* is. Will he please stop just long enough in his rush work to tell us how he does it, and thus relieve us of this curiosity?—ED.]

FRESH LIGHT seems to be coming on that foul-brood-boiling business all the time. Harry Howe now says, p. 306, that the bacillus can't live in honey, and that the spore can't vegetate in honey. Then the spore's the only thing we have to deal with. But if Mr. Brice is interpreted correctly, no amount of boiling will kill the spore, and, acccording to that, three hours' boiling would not be safe. But it certainly looks as though boiling destroyed spores for Messrs. Mackenzie and Howard. I'm still standing on Taylor's side of the fence, but sending exploring glances toward your side, Ernest. [But, doctor, my side is safer until we have more light. Better get over on my side of the fence, and I will give you a quarter of my log to sit on. When Mr. Thos. Wm. Cowan, editor of the *British Bee Journal*, says fifteen minutes' boiling is sufficient to destroy even the spores, then I will go so far as to get on the fence — perhaps I will get clear over; but I am not going to do any climbing just yet.—ED.]

MRS. A. J. BARBER has struck a good plan to get bees to starting in sections, page 309. The basic idea is that bees will start work on comb that is emptied of its honey much more readily than on foundation. And they'll start just as soon on combs in sections as on extracting-combs. Moreover they'll make a prompt start on a single section of comb. Mrs. Barber will find it a decided step in advance, and so will you, Mr. Editor, if you will put a bait section in a super instead of putting on extracting-combs, thus getting all honey in sections. [But, doctor, I have tried both ways. Down here in Medina bees get more into the *working spirit* after they have worked in a set of half-depth extracting-combs—much more so than if they putter away with one little bait section in a comb-honey super. One bait section starts only a few bees comparatively. A whole set of half-depth extracting-combs starts the *whole colony*. It is not necessary that these combs should be built full; but after they once get nicely started, take them off and put a comb-honey super on top. But say, doctor, why not produce a little extracted honey? When comb honey sells at 10 cents, and extracted at 6, both of the same quality, is there not just about as much money in one as the other? I am speaking of the prices that ruled a year ago last summer, in a wholesale way — the price that the bee-keeper got for his honey. More extracted can be produced than comb; and the cost of packages for 60 to 120 pounds of extracted honey is much less than the cost of the package, including the sections, for the same weight of comb honey — a good deal less if we include foundation for sections. You may say you have no market for extracted. Are you sure? You may say, again, that you get more money for your honey than 10 cents. In the same way, you would get more money than 6 cents for extracted. You aim to supply the market early, and thus get a good price; and you are careful to grade honestly, and always sell of the same quality. As I understand it, your buyer practically contracts for your honey before it is produced, because he *knows* beforehand just what you will give him. There, now, I did not mean to get off the question; but if, while on the side track, I hit a nail on the head, it is a little item that some of our hard-working producers ought to bear more carefully in mind.

In the mean time, doctor, suppose you figure up how much it costs you a pound for packages for comb honey, including foundation in lots of 100 to 150 pounds. Include in your figures labor for putting in foundation, folding sections, making shipping-cases, etc. Extracted in 60-lb. cans costs about ½ cent per pound. The point I am trying to get at is

this: Is there not as much or more money in extracted at 6 than in comb at 10 cents? If higher prices can be secured for both, the relation will be the same.—ED.]

"The sun is up," shouts lazy Drone;
"Ye workers, take to wing.
And bring me lots of nectar fresh,
While I—*sit here and sing*."

PROGRESSIVE BEE-KEEPER.

A prize story, "Two Worlds," has been commenced, written by Mrs. J. M. Null. I am well pleased with it. The editor says there were 17 contestants, and two-thirds of them wrote with a lead-pencil. I can reallize how Mr. Leahy felt about the pencils. Why anybody will choose a pencil instead of a pen for writing to an editor is more than I can make out. Always use a pen, and a blunt one, and write on good paper. Use ruled paper, and don't run one line into another. Be careful to make the end of a sentence plain, ending with a period, and beginning the next sentence with a capital letter. Then — get a typewriter! Mr. Leahy says four of the stories were excellent, but were rejected on account of bad spelling, grammatical slips, etc.

BEE-KEEPERS' REVIEW.

In regard to an easy way of rendering wax, Mr. A. C. Miller, of Providence, R. I., says if old combs are properly treated before melting, the pollen and silk will not absorb the wax nor produce the jelly-like gum referred to, and much of the annoyance of reduction will be avoided. The best method is to place the combs in a strong solution of sulphuric acid and cold water about a week before melting. If the combs are well broken up, and occasionally stirred in this solution, the acid will decompose these troublesome substances, and a large part of them will remain behind when the crushed comb is removed to the melting-pot.

C. Davenport says a solar extractor should have double glass, and be made tight. The combs should be spread out, and not piled on each other. He finds the wax is so completely extracted in this way that any further attempt to get out more by pressure is time wasted. If the comb contains pollen, a pressure will get from 20 to 50 per cent more wax. The time required to treat old comb in a solar extractor is so great as to make its use entirely out of the question with Mr. Davenport, so he has settled upon the old-fashioned method of boiling as being the quickest and most effective way of rendering old comb. By this method he gets 7/8 or more of the wax without the aid of a press. Before boiling he soaks the combs ten days or two weeks in barrels, weighting the wax down with stones. He puts the wax into a sack before boiling, keeping it well stirred with a stick. After the water boils it requires but a short time for all the wax to escape from the sack. The sack must not be made of woven stuff, but of coarse knit cotton stuff like that in a coarse knit heavy cotton sock.

AMERICAN BEE JOURNAL.

Daniel Whitmer reports a remarkable case of the cure of rheumatism by means of stings. He was attacked with sciatic rheumatism, resulting in paralysis of the back, thighs, kidneys, bladder, etc., and was forced under the doctor's care, and confined to his room for three months. One day in handling a colony of bees he irritated them so that they rushed out at him and stung them so as to make him dance whether he believed in it or not. In only 24 hours he was a well man so far as rheumatism was concerned, numbness all gone. He says it has returned three times in 20 years, but it has subsided every time he got out among his bees in the spring.

Touching the union of the "Association" and the "Union," Mr. York well says, "The door is open for the Union to come into the Association whenever it decides to cast in its lot." That's it. One of the associations must simply cease to exist, and its members be incorporated in the other. Those who are trying to unite certain other organizations nowadays would do well to read Mr. York's words. The only way is to find the best, and annihilate the others by disbanding in favor of the better.

The political discussion between Mr. Doolittle and Mr. Abbott is very interesting. In winding up his reply to Mr. Doolittle, Mr. Abbott touches on the subject of adulteration as follows: "I honestly believe that the adulteration fraud is the gigantic crime of the century, and a disposition to wink at it shows a lack of moral sentiment that should start into activity the most sluggish and indifferent citizen of a free country. Adulteration ignores the foundation principles of all moral sentiment, and undermines two of the recognized basic ideas of legitimate trade and commerce — namely, that a contract is the agreement of two minds as touching one thing, and that every man who has come into the lawful possession of any article has a right to fix the price at which he will part with it. If he makes the price so many pounds of honey, and you give him half the amount in glucose, you defraud him."

Mr. York spells "burr-comb" with one *r*, but spells *fuzz* with two z's, instead of *fuz*. Why not go the whole length and spell it cel, wil, *be* for *bee*, etc.? The new spelling is certainly misleading when *past* is used for *passed*. A law that was *past* last March had ceased to be a law at that time.

Although a little out of my beat, I make a few extracts here relative to the Leahy Mfg. Co., Higginsville, Mo. I get my information from the *Advance*, of that place:

In 1883 R. B. Leahy, then a struggling day laborer, made his appearance in this city, and for a time found employment doing odd jobs for several of our oldest citizens. Soon after his arrival here he opened a little wood-shop and began his life's work, that of building bee-hives and kindred supplies. His largest and most expensive piece of machinery at that time was a foot-power saw. With this he worked early and late, and by severe perseverance he added to his plant, little by little, until he was so fixed that his work and output attracted some little attention.

In 1890 he started the erection of his present plant, and, being short of finances, succeeded in interesting John J., Jas. E., F. M., and E. B. Gladish sufficiently to form a stock company, of which he retained a half interest. This stock company was organized under the name of The Leahy Manufacturing Company, with a paid-up capital of $8000. R. B. Leahy was appointed general manager and treasurer, and Ed. B. Gladish, general foreman of the shops. The business has been continuously under the same management since, and the present business is a sufficient proof that it has prospered.

Late last fall it became necessary to again enlarge the plant, and a new brick addition was built, which, with the new and improved machinery added at that time, doubled the capacity of the plant. They now occupy a two-story brick building, 54x130 feet, thoroughly equipped up stairs and down with the best improved machinery. In addition to the main building they have several warehouses, their waxroom and tin-shops being under separate cover.

In the busiest season, which is now on, the plant is run day and night, and from 35 to 40 men and boys are employed during this period. That this factory is a great boom to labor has been duly demonstrated, over $10,000 being paid out here last year for labor alone. Sixty-five carloads of material was consumed in the manufacture of goods sold last year, which amounted to over $30,000.

DADANT-QUINBY HIVES VS. TWO AND THREE STORY EIGHT-FRAME LANGSTROTH.

Arguments in Favor of the Former, by a User of the Dadant Hive; the Editor Challenged; the Challenge Accepted.

BY A. N. DRAPER.

Mr. E. R. Root:—I have just received your April 1st issue. In your footnotes under Mr. Dadant's article, page 259, I find these words: "But I get a good deal of solid comfort out of the notion, that almost amounts to conviction, that two eight-frame hives will accomplish the same results," etc. As I have had a good deal of experience along this line, perhaps it will not be uninteresting to you at this time.

In 1889 I had a little over 200 hives of bees that I was running for extracted honey. I had them in eight-frame Simplicity hives, with an average of about three bodies to the hive containing 24 Simplicity frames. I wintered them in one and two stories. December 10, 11, and 12, 1889, I attended the State Horticultural Society's meeting at Hamilton, and, of course, I visited the Dadants. They had from 70 to 80 barrels of honey on hand of that year's crop; in fact, the whole basement of their barn was filled with barrels full of extracted honey, as they had no other building large enough to hold their crop of honey. Their crop at that time was worth over $4000 cash. At that time I had my second attack of bee-fever, and I took a serious relapse. Their bees were all packed in leaves for the winter, and I had a good opportunity to see how it was done. I then and there bought me a Barnes foot-power saw, and that winter I made up over 200 of those large hives.

You will see on p. 151, Art. 306, Langstroth Revised, as follows: "The Langstroth-Simplicity frame is long enough, but hardly deep enough. The Quinby frame is deep enough, but would be better if a little shorter." In Art. 397 they say: "We would counsel beginners to use a frame as long as the standard Langstroth, and as deep as the Quinby."

Ten years have gone by. Some of the winters I had over 400 colonies. I have packed leaves entirely around two-story eight-frame hives, with the exception of the south end. Kindly permit me to remark, that, could you have been here and seen the difference between the large hives and the two eight-frame hives, your notion of "solid comfort" would have given way to feelings of supreme disgust. So thoroughly dissatisfied with them I became that I have sold off nearly all of my eight-frame hives.

I will make this proposition to you: Make thirty or forty of your ten-frame hives with the brood-frames 2⅛ inches deeper than your regular size, and the brood-chamber that much deeper to receive them. All the rest of your fixtures are to be just as for a regular ten-frame hive. Fill them up with bees for one of your out-apiaries; pack them warm for winter and spring. If, after three years' experience with them, you don't find them to give you more solid comfort than any other style of brood-chamber you have ever tried, for the production of either comb or extracted honey, kindly send me a bill for whatever the expense of the experiment may be, and I will send you a check for the amount. Your Hoffman frame will overcome the difficulty of the bottoms of the frames swinging together. As I understand it, the swinging-together of the lower parts of the frames was always considered the main objection to the deep frame.

The Hoffman frame will be superior to any the Dadants have used. See their spacing-wire in their book, p. 168, Art. 347. In practice, that spacing-wire is a very serious objection that the Hoffman frame would overcome. I have thought of ordering one or two hundred of these hives, but have had poor seasons and too much other business on hand.

The fact is, in actual practice this extra 2⅛ inches is added right through the middle of the brood-nest, where it is spread to its widest extent, and the two other frames are also added right in the middle of the brood-nest. If you wish to see bees outstrip any thing you have ever seen in the way of raising brood during March, April, and May, try this. I can't see any thing else in the way of your trying this experiment except your dislike of having a different-sized frame. Your regular

outside winter-case is to be kept on it with leaves packed in top, and then you have what is virtually the Dadant hive.

You have told me yourself that you made a business of trying experiments for the benefit of the bee-keepers. Can you give any good reason for not trying this, as it has been discussed for years, and by very able men, and still you display your ignorance in regard to it every little while?

Upper Alton, Ill., Apr. 8.

[I have read over with a great deal of interest all you have to say. While I can not for the life of me see *why* a large colony in one brood-nest should secure so much better results than the same colony in two brood-nests, I am not going to be foolish enough to dispute your facts and figures. As to your challenge, yes, I will accept it, and I have this day ordered a few hives made to take L. length of top and bottom bars, but an extra depth of end-bar. I hope to get these hives into use this summer; but in making this test I hope some of my friends, and some who perhaps are not my friends, will not score me by assuming that I am going to get on to a new hobby, and ride it for all it is worth. While I believe in large colonies, I do not see how it makes any difference whether they are in one or two brood-chambers; but perhaps it does. If the test with a few hives this summer is favorable, then I will try more next summer. But before I can be convinced I shall want to see about half an apiary in Dadant hives pitted against another half of apiary in the same location, of colonies in eight-frame L. hives; and if Dr. Miller is interested in the same problem, if he cares to make a test with the same number of colonies I will furnish the hives free.

I omitted to state that possibly, if Mr. Draper had made his two tests for the production of *comb* honey, the difference might have been in favor of the shallower frame.—ED.]

LOYALTY TO TRUTH.

Is the Review Critic Hypercritical?

BY DR. C. C. MILLER.

The critic of *Review* takes to task the editor of GLEANINGS for changing his mind. One of the items mentioned in that connection is the matter of the hostility of bees to dark colors. Mr. Root formerly held that one was likely to be stung no more with dark than with light clothing. Then he changed his mind, Mr. Taylor says, because "a few 'reports' came in, which, in so far as they went, at least, had no foundation in sound reason, so far as I could discern." Which goes to show that Mr. Taylor's discernment is sadly in need of tinkering. He closes the paragraph by saying, "The cause of truth is advanced by careful, cautious, sober loyalty to it." I confess I don't quite see how the application of that sentence to the case in hand has any "foundation in sound reason." Does Mr. Taylor mean to intimate that Mr. Root has been disloyal to what he thinks is the truth? I do not believe so. It is probably rather a case of "darkening counsel by words without knowledge."

It is true that "the cause of truth is advanced by loyalty to it," and that very loyalty demands that, when a man finds he is holding on to an error, he shall promptly right about face, instead of stubbornly holding on to an error, as Mr. Taylor is too much inclined to do.

Another count in the charge is that, when Mr. Root learned that spores of foul brood were not killed by being subjected to a temperature of about 212° for more than two hours, he gave up the belief that a few minutes' boiling was sufficient to destroy the vitality of spores. If he was a reasonable being, with the light he had what else could he do? Now comes Mr. Taylor with new light on the case, and says that boiling water and boiling honey are very different things as to their heat, making it seem a reasonable thing to believe that it is quite possible that 15 minutes' boiling in honey may be more destructive to vitality than two or three hours in water. Mr. Taylor may consider it "hasty and ill considered judgment" on my part to change my mind promptly, and agree that 15 minutes' boiling is enough, but that's exactly where I stand at the present moment; and if I find out that boiling honey is no hotter than boiling water, then I'll change back again. It seems to me that's the only way for one who wants to be loyal to the truth.

WAS MR. DADANT FAIR?

Another item that Mr. Taylor gives is that, after Mr. Dadant overestimated the cost of large hives, and Mr. Root found out the cost to be considerably less, he said, "It shows that you meant to be entirely fair." Mr. Taylor says, "Of course, no one suspects Mr. Dadant of ever meaning to be unfair. But it seems strange to me that he should be commended for fairness on account of a case in which he made a statement that was manifestly *not* fair." That looks as though Mr. Taylor has established for himself a critic's code of language that does not entirely agree with that of common people. He says it seems strange to him that Mr. Dadant should be commended for fairness. I can't say how such things may be considered in the ranks of professional critics, but I do know that among common people such fairness is commended. Here's a man who not only always pays his honest debts, but in every deal he makes he is so anxious not to overreach that he pays a little more than he ought. Instead of saying, "That man is not strictly honest," people always applaud him for his honesty. A man who in controversy is willing to give to an argument of an opponent all the weight it deserves, and sometimes a little more, is commended by honest common people for his fairness.

I'm inclined to believe it's a case of Dr. Jekyl and Mr. Hyde. My old friend Mr. Taylor heartily commends Mr. Dadant for his fairness, and says, "I wish there were more like him," while Mr. Taylor the critic gets

out his rule and square, shuts one eye, and says, "That statement is not in exact accordance with the facts in the case. Mr. Dadant is an unfair man." Possibly no fault would have been found with the sentence if Mr. Root had said, "While you were incorrect in your statement, Mr. Dadant, the error you made was unfair to yourself, and that's a good deal better than if you had erred on the other side."

LOOSE USE OF LANGUAGE.

But what in the world made him put up his rule and square before he penned the last sentence of the paragraph in which he so carefully measures Mr. Root's language? That last sentence reads, "An injurious statement about a hive one favors is even more liable to injury than one about a hive one opposes." One statement is more liable to injury than another? To what injury is the statement liable? I don't really suppose Mr. Taylor means what he says; but when he insists so critically that others shall say exactly what they mean, why doesn't he make exact statements himself?

Marengo, Ill., Feb. 28.

[Mr. Taylor's reply:]

I highly appreciate the privilege of having my reply to the above article from Dr. Miller appear along with it in the same issue, for thus a reply can be made much briefer, and at the same time much really incurable injustice prevented. I am also especially glad to appear in GLEANINGS, because many readers who have otherwise no opportunity may thus get acquainted at first hands with the bold bad man who writes criticisms for the *Review*.

It seems to me the foregoing criticisms of the doctor's must have been written in extreme haste, for in no other way can I reasonably account for the numerous instances in which he either fails to catch my meaning or else fails to express himself clearly. Thus he says that "I take to task the editor of GLEANINGS for changing his mind." Not at all, not at all; but for changing his mind hastily and without due consideration. Quite a different thing; and, moreover, I think this idea was expressed very clearly and with great prominence. Again he says he does not see the application of my sentence: "The cause of truth is advanced by careful, cautious, sober loyalty to it;" and it is quite clear that he does not, for a little later he requotes, saying, "It is true that 'the cause of truth is advanced by loyalty to it,'" and argues from it as if the two sentences were identical in meaning. As I wrote it it is no doubt generally true, and it may assist the doctor to see the application of it if he will permit me to say that his misquotation, which he affirms to be true, is by no means necessarily true. Careless, impulsive, indiscreet loyalty to truth may prove very disastrous. I was inveighing against *hasty* changes of opinion; and while such changes are quite consistent with a certain kind of loyalty to truth, it is not careful, cautious, sober loyalty to it. Then in the third paragraph he says, "Now comes Mr. Taylor with new light on the case, and says that boiling water and boiling honey are very different things as to their heat." I think the reader who had no opportunity to examine what I actually said would get a very erroneous idea of my language from the way the doctor puts it. I made no such positive statement. What I wrote amounted to little more than a supposition, supported, to be sure, by what seemed to me to be arguments that deserved careful consideration.

One more instance: In the paragraph relating to Mr. Dadant the doctor repeats the vicious trick he indulged in in treating of loyalty to truth of making a partial and inadequate quotation or statement some time after having made a full one. Thus he says, referring to me, "He says it seems strange to him that Mr. Dadant should be commended for fairness." I made no such statement as that, nor one that would bear any such construction; and the way the doctor puts it, it is well calculated to give an entirely wrong impression to any one who had not the article quoted from before him. These matters are outside the main questions, but they ought not to be overlooked, and I must still mention one or two other incidental matters.

There are certain coarse insinuations found in the doctor's article in such expressions as, "which goes to show that Mr. Taylor's discernment is sadly in need of tinkering." "Instead of stubbornly holding on to an error, as Mr. Taylor is too much inclined to do." "It's a case of Dr Jekyl and Mr. Hyde." Such, though the doctor indulges in them, are not to be recommended; but they are to be pardoned in his case, since he is not often guilty in that respect except when he is conscious of dealing with the blood-thirsty monster of the *Review*. Nevertheless, I feel that in such indulgence he is hardly doing himself justice.

Again, in conclusion the doctor writes a rarely entertaining paragraph about the "Loose Use of Language," aimed at me, all founded upon the substitution of one letter for another by the printer. Read it "injure," brother.

Now a word on the main points: As to the matter of my criticism of the editor's hasty change of opinion in the two points the doctor refers to, I am not sure the doctor has a correct comprehension of it, and I am quite sure his readers can not have unless they have read my original criticism, so I may be permitted an attempt to make it clear. For the sake of brevity I shall try to make it answer my purpose to refer to only one of the two points; viz., that concerning foul brood, and to that, only by way of answer to the question the doctor propounds in the third paragraph of his foregoing article; namely, "If he was a reasonable being with the light he had, what else could he do?" In my original criticism I said, "How different is the scientific attitude as shown in the *American Bee Journal*, page 18, where Prof. Cook says, 'I referred above to certain acorn-infesting larvæ that secrete nectar. I have never seen them, but have often heard of such — principally from Missouri—so often that I think they may be more

than a myth. Yet I am free to say that I should feel more certain if I actually saw them. I can see how oak-tree plant-lice, which are by no means rare, might lead to an erroneous conclusion' " (*Review*, 48). This quotation was made anent the editor's change of opinion, largely on account of the single report of Mr. Buchanan. So the answer to the doctor's question is: Assume the scientific attitude; seek for new light — not for just a little, so that there will be a preponderance; but, to change the figure, since his foundation has slipped from under him let him investigate until he has found another stable one. We see, in recent events, the results of the doctor's position. It is laughable (may I not say it without offense?) that, within the space of about two months, the doctor and the editor have each been upon both sides of the important question as to whether fifteen minutes' boiling of honey is sufficient to destroy the vitality of foul-brood germs therein; and, strange to say, they are upon opposite sides still, and the end is not yet. This situation is altogether a fine commentary upon the doctor's argument. Why should we be carried about with every wind of doctrine in scientific matters any more than in religious ones? Yes, the doctor, as he seems half to suspect, comes into the same condemnation unless he has some light which he does not reveal. If he has investigated the boiling-point of honey, and has found that its temperature is high enough to destroy with certainty foul-brood spores in the time mentioned, then he does not.

In the paragraph headed "Was Mr. Dadant Fair?" the pyrotechnics of the doctor are to me quite bewildering. They ought to have quite close attention; but as I fear I trespass on space I must treat them very briefly. The doctor speaks much of "honesty" and the "common people." I infer that there must be common people and common people, or else that locality makes a difference, for I am aware of none in this neighborhood, such as he describes; and the man who in "every deal he makes is so anxious not to overreach that he pays a little more than he ought" would not be looked upon by the common people here at all as he seems to be by those with whom the doctor is acquainted. Here one of the more conservative ones would say he is foolish; one of the more impulsive ones, instead of using the adjective "foolish," would use the noun with a more or less emphatic expletive before it. Or if the man were wealthy, so that he could always pay a little more than he ought without injustice to himself or to his family, he would not be "applauded for his honesty," though he might be for his generosity. Hereabouts the question of the amount of a debt is an exact science, and there is no necessity of paying more than is found to be due in order to be sure that a sufficient payment has been made. When one always gladly pays the exact amount due he is considered honest so far as financial matters go, and he can not be considered more honest by paying more. A name for honesty can not be purchased by a lavish use of money, or many a blackleg would have to be considered honest. When a man has no one depending on him, nor any creditors, he may, of course, be as generous as he likes with his money: it is a matter entirely between himself and the recipient. *But when one who is specially recognized as authority on a hive writes for the public about it, the character of his statements is not a mere matter between himself and his antagonist.* Tens and hundreds of others are waiting on his words, and he has no right to be generous in his statements. He is bound to be just—that is, *exact*. To be sure, this all started from a very little matter; but the principle is the important point, and I write to make that clear.

At the suggestion of the editor, as a sort of appendix to the foregoing I make a few comments on some points mentioned by him in late numbers of GLEANINGS. On page 189 he excuses himself for his change of opinion on the foul-brood matter because "it is safer to err on the side that a few minutes' boiling is insufficient," and "we should take that side which we know to be safe." If it is a question of safety merely, I fear the editor will be obliged to change his opinion again; for I am satisfied that, in the hands of many, three hours' boiling would not be entirely safe; at all events, I could give a course of procedure that would be safer than any length of boiling. But the question of safety and the question of the truth of a certain proposition, viz., whether the boiling of honey fifteen minutes is sufficient to destroy the vitality of foul-brood germs therein, are two very distinct things. We had been discussing the latter, and now the editor seems to be confounding another issue with it. We must keep different things distinct or it will be impossible to arrive at any just conclusion at all.

Referring to the editor's remarks on the "Boiling-point of Honey," p. 233, I wish to say that he seems to be asking too much of Dr. Miller and myself in the way of testing the boiling-point of honey when in his own great establishment he can not find a thermometer that will serve to find that point.

Further along the editor seems to be in error in speaking of the boiling-point of water as "212 or 213." At his elevation that point must always be below 212°.

Another error, I think, is found in his suggestion that possibly the scientist boils his foul-brood germs in beef gelatin. In so far as I have observed, scientists always speak of the resisting power of spores with reference to the boiling-point of water, and there would be neither science nor sense in boiling in some other liquid having a different boiling-point—not that the germs are actually turned loose in the water—I do not suppose that to be the case; but the flask containing the culture is suspended in boiling water, and in that way can get as hot as but no hotter than the water.

Now, we have made a distinct advance since the editor, though he has not determined the exact temperature of boiling honey, has found that it is decidedly higher than that of water. It now remains to be determined scientifically what effect boiling honey has on foul-brood

germs. What scientist will take the matter up and investigate it fully?

Lapeer, Mich., March 20.

[As will be seen by the date of Dr. Miller's article, this matter should have appeared some time ago; but one of the manuscripts was lost; and while we were waiting for it to turn up we lost considerable time before we located it. I make this explanation as several things have since occurred that might modify the statements of both parties in the controversy.

It appears that your humble servant, or his statements, are the bone of contention. At first I thought I would have nothing to say; but perhaps some explanation from myself ought to be made. From the fact that Mr. Taylor refers to himself as the "bold bad man," and a "blood-thirsty monster," one would infer that he thought Dr. Miller, myself, or our readers held him in such bad esteem. If so, he is decidedly mistaken. So far from being a "bold bad man" or a "monster," I never considered him any thing but a friend with a hypercritical turn of mind. If, on the other hand, the reference to "bad man" and "monster" is used as a sort of pleasantry then it is the first time I have known my friend to so far forget his severe dignity as to *joke* in print.

As to whether I have changed front too hastily in the matter of the length of time required to kill foul-brood germs and spores, and the alleged antipathy of bees for black, recent facts have gone a long way to sustain the wisdom of my course. In deciding in the first place, page 49 of GLEANINGS, that fifteen minutes' boiling was insufficient, I was backed by the European scientist Mr. Genonceaux, by Bacteriologist J. J. Mackenzie, of Canada, by Dr. W. O. Howard, and by the practical tests of a bee-keeper who, it seems to me, conducted his experiment with extreme care. I do not say that these experiments were conclusive, but they were sufficient at that time to justify me in taking the *safe* side. Since that time we have the corroborative evidence from Scientist Brice, of England, Prof. C. F. Hodge, of Massachusetts, and an article from Thos. Wm. Cowan, whom I regard as the most expert scientist we have in our ranks. In addition to what he says elsewhere, in a private note he says this:

Dear Mr. Ernest Root:—I got GLEANINGS for March 15th last evening, and have gone through the correspondence about foul brood, and I think you are perfectly justified in recommending prolonged boiling of honey so as to render it safe to give back to the bees. It is astonishing how difficult it is to make even intelligent people understand what a great difference there is between the bacilli and the spores.

THOS WM. COWAN.

Pinehurst, Pacific Grove, Cal., April 18.

FIG. 1.—A SHEDDED APIARY IN CUBA; A. W. OSBURN IN THE FOREGROUND.

And even Mr. Taylor himself, in his fourth and last paragraph, says he is satisfied that, "in the hands of many, three hours' boiling would not be entirely safe."

I am at a loss to reconcile this quotation with all that he has said before this, tending to take the opposite view; and if Mr. Taylor is convinced, as in the quoted sentence above, I can see no reason why I was hasty in changing front. If I have any influence with the readers of GLEANINGS, and if there are careless bee-keepers among our readers, it was my honest duty to right about face.

As to the matter whether bees dislike black or not, that is not a question of much importance; but the preponderance of evidence seemed to support quite strongly the view that bees do dislike black. I would far rather have it said of me that I was too much inclined to change front when convinced of error than

too much inclined, as I fear Bro. Taylor is, to stick to an old expressed opinion in spite of evidence to the contrary.—ED.]

THE NEW-YORK HONEY-MARKET.

How the Market was Broken Down in New York Forty Years Ago; the Amount of Honey now Sold Extracted, and Where it Goes; Honey Gingerbread.

BY J. E. CRANE.

As I was coming through New York in December last I thought I would spend a little time in the markets of the city to see what I could learn that was new in regard to the sale of honey. Many years ago I sold most of my honey in that market, and was fairly familiar with its wants and capacity. The last of my

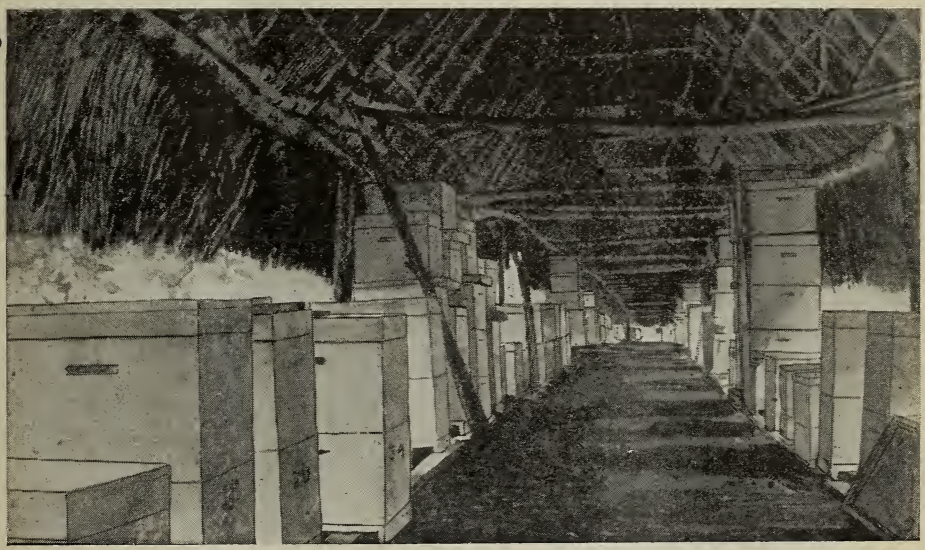


FIG. 2.—CASANOVA APIARY, CUBA.

being in that market, much of the honey was in four-pound boxes, while many of the more enterprising bee-keepers had already changed to two-pound single combs, with glass on each side. In December last I did not see a single four-pound box, and scarcely a two-pound section remained.

Mr. Segelken, of the firm of Hildreth Brothers & Segelken, received me very cordially, and gave up his time to answering my questions which were not a few, as he showed me their large stock of beautiful honey. I expressed some surprise that there was so large a proportion of honey in tall boxes, when he told me that they were much preferred to the square 4¼x4¼.

"Yes, but have not these same 4¼x4¼ done more to make a demand for honey than almost any thing else?" I asked. He admitted it was so, but said they had had their day, and must give way to taller sections. Another dealer told me he had no use for square sections, which I thought was putting it pretty strongly.

Mr. Segelken said the 3⅝x5 were preferred to a 4¼x4¼; but a section 4x5 was preferred to either. I was told 4½ inches was quite too low. Indeed, so much was said in praise of the tall section I began to wonder if it was not a fad in that market. As I noticed very little honey that was finished to the wood—i. e., very little where the row of cells next to the wood was capped—I inquired as to the value of it, or, perhaps, I might better say, the importance of it, and was given to understand that in New York it was of no importance whatever; and then I began to wonder if this was not equally a fad in some other places. However this may be, it seemed certain that in New York a tall section is more in demand. A thin comb with a large comb surface of light weight was preferred to one that is thicker and has less surface, or of heavy weight. If a comb were one inch thick it would answer. Thickness does not seem to count for as much as surface.

A great deal of glass is still used in New York, on the sides of sections, most dealers seeming to prefer it. As honey began to be sold in that market fifty years ago or more in glass, so it is still; while in all the newer markets it is rejected so far as I know.

Mr. Segelken expressed himself very strongly on the size of packing-cases, saying that each case ought to hold at least 25 combs, and one large enough to hold 30 combs would be better. He said, as wholesale dealers have said to me before, that almost the first question a buyer asks in looking at honey is, "How many sections in a case? and how much do they weigh?" And this led to a discussion of selling by count rather than by

weight, as now generally practiced. He seemed to think it likely to come about, and would for himself prefer to do so; in fact, he was already selling some in this way.

Remembering the experience of the late Moses Quinby in shipping honey to that market, when, in 1860, 20,000 lbs. broke down the market completely, and much of the honey was carried over to the following year before it was sold, I inquired how much honey was now taken by the same market, and was informed that there was no trouble in disposing of about 6,000,000 lbs. yearly, about five-sixths of which was extracted honey; that while, formerly, there was a demand for honey but a part of the year only, now there is a demand the whole year round. These facts were of much interest to me, as the prospective demand for honey is one of great interest to every honey-producer. I might say incidentally right here that, previous to 1875, or about that time, there was, so far as I know, no New England city where honey was regularly sold at wholesale. A little was sent to Boston or other cities, and sold to any one who would buy, or left to be sold on commission by any one who was willing to handle it, or, perhaps I should say, who could be trusted to do so; but I have the impression that most retail dealers, previous to 1875, in New England, went to New York for their honey. To-day several New England cities have wholesale dealers, some of them doing an immense business. These facts show the immense increase in the demand for honey during the last thirty or forty years; and, while encouraging, it is not equal to the gain made in other lines, as, for instance, in the sale of grapes. In 1846 the Keuka Lake region shipped "from two hundred to three hundred pounds" by the Erie canal to New York, and broke the market, while in 1890 the same region shipped some 40,000,000 lbs. of grapes, to say nothing of the enormous quantities sent from other sections. See "The Evolution of Our Native Fruits," by Prof. L. H. Bailey, page 68.

But I was curious to know to what use such large quantities of extracted honey were put. In some of our bee journals it has been reported that extracted honey was used very extensively by tobacco manufacturers, and I believe by brewers also. I was told that but little if any was used for these purposes at the present time, as the brewers are taking kindly to glucose, and tobacco-manufacturers are using sugar syrup instead of honey.

There is a growing demand however, for extracted honey, from druggists and confectioners, and for making honey-cakes, of which the Jews consume large quantities; besides, a large amount of extracted buckwheat honey is exported, to be made into gingerbread. Good! I could have sent my hat flying high above me, only I was indoors and those about me might think me a little off should I become too much excited; but really my heart was lighter at the thought that my honey was not to be used for the manufacture of beer or tobacco, and I was not in any way helping those industries by increasing the production of it.

I was disappointed on finding so little honey in plain sections in New York: for had not E. R. R. told me that quite likely ten to fifteen per cent of all comb honey last year was put up in this way. I wanted much to compare it with the old-style sections in the same market, but there did not appear to be one-half of one per cent in the New York market; but Mr. Segelken quickly explained by saying that the plain sections were preferred by retail dealers, and picked up by them.

I saw but one lot of honey at Hildreth Brothers & Segelken's, out of a large number, that appeared to have the row of cells next to the wood sealed perfectly, like photographs that have recently appeared in GLEANINGS. This lot of honey was built in four-beeway sections without separators, which would indicate that a passage around the edge of the box will encourage bees to finish out and up to the wood much more perfectly than when no such passageway is used. This is a strong point in favor of the Hyde-Scholl separator, or that of Mr. Aspinwall's that enables the bees to pass freely around the edges of sections, and at the same time compels them to build straight combs and combs of even weight.

Middlebury, Vt.

[Some few days ago Mr. Fred Muth, son of the late Charles F., gave us a call. As he was with his father when he did a large business with bakers and others, I asked him a good many questions. He referred to the fact that there was a time when honey was used largely in the brewing business; but of late years glucose has taken its place. Knowing that his father had sold many tons, perhaps, of dark honey to bakers, I asked him why it was that bakers prefer honey to any other form of sweet for certain kinds of baked goods. "Because," said he, "it takes little or no glycerine. Where honey is used as a sweetener, the baked goods remain moist for a great length of time; and honey is the only sweet that will accomplish the desired result. The fact that glycerine has to be used with other syrups, makes them more expensive; and as a matter of economy bakers use honey, and more largely than many people think."

No doubt this is the reason why honey is used in gingerbread. A dry gingerbread is practically unsalable. One that is soft and moist as honey will make it is always salable; and these honey-jumbles, I have sometimes thought, improved with age. When they are first baked they are apt to be too crisp—that is, somewhat dry; but after they have stood for a time they become moist and toothsome.

It is astonishing how the demand has been increasing for the four-beeway sections lately. It simply goes to show that plain sections have demonstrated that lateral or freer communication has *something* to do with better filling of the sections. If lateral communication is a desideratum it can be secured with four-beeway sections; but even these require modified separators in order to secure the full benefit. Ordinary four-beeways used with common separators would be little if any better than two-beeways, and they are much more inconvenient in putting into and taking out of shipping-cases.—ED.]

HOFFMAN FRAMES WITH SHORTENED TOP-BARS.

The Cold-blast Smoker Defended; the Value of Hot and Cold Air with Smoke; Making Syrup by the Percolator Plan; Large vs. Small Hives; the Bearing of Locality on the Whole Question.

BY C. DAVENPORT.

I have seen very little, favorable or otherwise, in regard to those short top bars, end spaced with staples. Some one, I forget who, intimated that there was or might be trouble on account of the ends dropping off the rabbet if the frames in handling got cornerwise in the hive. Last spring I cut the ends off the frames in ten hives, and I have not found any trouble in this respect, and I can not see how there would be any necessity for moving the frames cornerwise enough so there would be; for in practice they have to be moved much more diagonally before one end drops off the rabbet than one would think by looking at the frame; and while it is true I tried them in but a small way I made a point of handling them in the ten hives that did contain them, a number of times, on purpose to see how they worked, and I consider them a decided improvement; and if, with my present experience with them, I had to buy hives this spring I would order short top-bars. I intend to shorten the ends of enough frames this season to give the matter a thorough trial.

It is very seldom that an article calls forth such a long footnote as mine did some time ago about smokers; and while you have said you never desire discussion for the mere sake of argument, neither do I; and it is very seldom indeed that I reply to any criticism or remarks about any thing I write; but I should like to make an exception in this case, and, if you will allow, say a few more words on the subject.

You say it takes longer to light and get a cold-blast smoker going. Why, with a cold-blast smoker properly made, and the right kind of fuel, all that is necessary to get it to going is to put in the fuel, touch a match to it, and *she* is off at once, creating a dense volume of smoke almost at once. I do not say this applies to the Clark smoker—far from it; and I feel as sure as I do about any thing I think I know about bees, that smoke from a cold-blast smoker is better for general use in a yard than that from a hot blast — that is, with Italian and German bees and their crosses. Cyprians I know nothing about.

You say hot air alone will subdue bees. I know it will; but when it is employed it crazes and injures many bees, and, if hot enough, kills many. I firmly believe that the injudicious use of a hot-blast smoker causes the premature death of many thousands of bees in the season when a smoker is most used, and in some cases hundreds from single hives, where, for instance, a colony is handled after the fuel is well burned down so that the bees get direct blasts of very hot air right off the coals—not that they die at once, but they probably might as well, so far as being of any use afterward is concerned. I am aware that I stand almost if not wholly alone in regard to this matter, as I did once before upon an important matter relating to our pursuit. This was when I wrote and described how, when preparing feed, I mixed sugar and cold water, equal parts, by simply putting them together in a barrel and stirring occasionally until the sugar was dissolved.

About this time, or shortly before, there was a good deal said about making feed by the percolator plan. It seemed to be thought by many that the percolating was a great benefit in some mysterious way over simply mixing the two together. I claimed that simply mixing the water and sugar together made just as good feed as was possible to be obtained by any percolating process, and I think that all who have tried the two methods now agree with me, and I believe I may claim the honor of being the first one to advocate the use of, and to describe, how to mix cold water and sugar together for feed.

I have been asked if Mr. Dadant has, by what he has said of late, convinced me that large hives are best. No. He has not convinced me that they are best for *my* locality; but he has explained and argued his side of the subject in a very clear and able manner. It has been said in effect that Mr. Dadant practices what he advocates; that is, he recommends large hives, and uses such exclusively himself. I think this will apply to most of us, and even more so in my case; for, while I have advocated ten-frame hives as the best for bee-keepers in general, I have been cutting down and selling the colonies in my large hives until I have not and do not intend to have any thing in the shape of a frame hive larger than the eight-frame; in fact, I have used and obtained excellent results the past two seasons with some of less capacity than eight frames. While I know from experience that it requires a greater amount of work to manage a yard to the best advantage by the expansion plan of adding one or two combs at a time, I think there is no question but that good results, in both comb and extracted honey, can be obtained by the method Mr. Dadant so ably champions; but in some localities—here, for instance—when it is the most important time to have queens do good work, the weather is often, for much of the time, so cold that a colony in an extra-large hive is at a great disadvantage on account of not being able to keep the temperature high enough for as good results in brood-rearing as they could in a smaller hive; and, though Mr. Dadant says a large hive can, by the use of a division-board, be converted into a small one, this is, I think, a mistake; it can be contracted with a division-board; but so far as keeping the hive warm is concerned it would be better to leave the extra combs in tight division-boards. Yes, I bought forty hives once that had tight division-boards, and they *were* tight after they had been in the hives for a short time. Some of them would tear to pieces sooner than come out; and those that would come out did not wish to go back. Division-boards tight enough to really convert a large hive into a

small one are impracticable where the quantity and quality of the propolis are such as we have here; and what is claimed to the advantage of extra-large hives so far as colonies in them being larger, so that it will require a less number to gather as much or more surplus, and stock a range, is theory if applied to this locality; for here a colony in the spring, as a rule, gets down to about a certain size whether the bees are in a large or medium-sized hive; and a hive not larger than the ten-frame hive gives them ample room to develop what workers they can in time to be of benefit during our main flow. Later some colonies might require more brood-chamber room; but reared then this extra force of workers would be consumers instead of producers; or, in other words, it would be no advantage, but an expense, to have them reared.

Southern Minn.

[Your estimate of the staples under the top-bar is exactly mine. They add little or nothing to the cost, and make a very great difference in the general ease and convenience of handling the frames.

As to the smokers, it is evident you have a cold blast that is very much superior to the Clark; and if you send us, at our expense, one of the smokers referred to, I will have the same illustrated, and will comment on it further after having tried it. If we do not like it we will make you a new one embodying the same features, and send that to you.

I believe you have come the nearest of any one I know of in giving a good reason why a locality like yours would favor a small hive. It is no doubt true that in early spring a cluster of bees in a large chamber would have more difficulty in keeping warm than in a smaller chamber; but how do you reconcile that with the fact that the Dadants are but little south of you? The winters in both cases are practically the same.

Referring to tight-fitting division-boards, I agree with you exactly. We had them one season. Besides disturbing my mental equilibrium in trying to remove them, I found they were but little better, so far as the confinement of heat was concerned, than the board that has a bee-space all around it like a brood-frame.—ED.]

THE CANADIAN PURE-HONEY BILL.

Some Statements Corrected.

BY S. T. PETTIT.

Mr. E. R. Root:—On page 110 of the *Bee-keepers' Review* appear some corrections of erroneous statements *re* the passage of the Canadian Pure-honey Bill; and as those statements were reproduced in GLEANINGS, page 500, 1896, I can not do better than request that you reproduce what is said touching the matter in the *Bee-keepers' Review* for April, 1899, including my remarks and quotations, Mr. T. S. Sproule's letter, and the bill. My motives in writing and pushing the bill were pure, and those charges to the contrary are extremely painful.

Dear Mr. Hutchinson:—I need not tell you that, when people get excited or deeply moved over discussing an important matter, it sometimes happens that exaggerations creep in; but in the case here referred to, actual inventions were employed, and our bill suffered. We have now all had time enough to come to ourselves sufficiently to let truth prevail. I wish for nothing more.

In the *Bee-keepers' Review* for 1895, page 348, the following may be found: "It would help some toward peace if Canadians would cease trying to get a law passed for the purpose of persecuting their neighbors. The sugar-honey law, which has been offered to two parliaments in succession, gives itself away by its wording; evidently not so much intended for general enforcement as for a handy club to hit prominent heretics." Certainly these are strange statements. Comments are unnecessary. The bill below is a sufficient answer.

Then, further along, the writer continues, "The act is so draconically worded that the most innocent beginner in the land could be put in prison for it for no greater crime than feeding sugar to his starving bees to keep them alive over winter."

Doubtless, Mr. Editor, some one must have imposed upon the *Review*. I wrote the bill, and I am not ashamed of it, and I regret that it did not become law unmutilated; but, to place beyond controversy the point as to whether, when first introduced to Parliament, it contained the necessary proviso for feeding sugar to bees when necessary to do so for food for them, I wrote to T. S. Sproule, M. P., who had the bill in charge, and here is his reply, and also the bill which, in due course, he kindly sent me.

MARKDALE, Jan. 31, 1899.

My Dear Pettit:—I was most agreeably surprised, on receipt of your letter of the 26th inst., to hear from an old friend whom I have so often thought of and wondered how he was faring in life. I need scarcely say I trust our pleasant associations together during the time you were in Ottawa, and the faithful and energetic way you stuck to and advocated the "Pure Honey" question, endeared you to me to such an extent that I can never do other than think in the most kindly way of you. I am perfectly satisfied that, in the first bill, there was provision for feeding bees sugar when required for food; but it is so long since, and memory is so treacherous, that I might be mistaken; and to put it beyond contradiction, I have written the clerk of the Distribution Office to send me a copy of the original bill as introduced; and when that is received I will forward it to you, and then you can put an effectual quietus to these untruthful statements which from time to time appear in the bee-journals. Yours truly, T. S SPROULE.

(Copy of the Bill.)

Her Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:

No imitation of honey, or "sugar honey" so called, or other substitute for honey manufactured or produced from cane sugar or from any other substances other than those which bees gather from natural sources, shall be manufactured or produced or offered for sale in Canada, or sold therein; and every person who contravenes the provisions of this Act in any manner shall, on summary conviction, incur a penalty not exceeding four hundred and not less than one hundred dollars, and in default of payment shall be liable to imprisonment for a term not exceeding twelve months, and not less than three months: Provided that this Act shall not be interpreted or construed to prevent the giving of sugar in any form to bees, to be consumed by them as food.

Yes, the bill was offered to two parliaments in succession; but it did not fail because of its faultiness, but because of the malicious and unscrupulous attacks upon it from those within our own ranks, assisted mightily by mixers and adulterators. We have simi-

lar laws to protect our butter and cheese, and we know how to appreciate them. S. T. PETTIT.

Belmont, Ont., March 15, 1899.

[I did not know until recently that Mr. Pettit felt that an injustice had been done him by the statement appearing in GLEANINGS, page 500 for 1896. Indeed, I don't think I knew at the time that he was the author of the bill that was said to be so "draconically worded" that there was no provision for feeding bees. In any case, I am sure neither Mr. Hasty nor Mr. Hutchinson meant to do the author of that bill an injustice, and if they made a misstatement, as appears from above, it was because they were misinformed. While it seems a little strange that the matter should have been allowed to go so long uncorrected, yet at this late date, three years after, GLEANINGS is very glad, in justice to Mr. Pettit, to make the correction as prominent as possible.—ED]

DRONE-COMB; NON-SWARMING BEES, ETC.

Travel-stain Due to a Secretion that is More Abundant During a Poor Honey-flow than a Rapid One.

BY S. P CULLEY.

We believe "the first and primary cause of bees constructing drone comb" in preference to worker comb during a heavy yield of honey to be the carrying-out of the idea of economy of wax (see "Honey-comb," in A B C book), together with haste in the preparation of honey room. When there is a flow of nectar the bees' instinct is to store as great a quantity as possible. They want the most space in the least time, with the smallest amount of wax. Building drone comb secures this, hence they build it. Often they are in such haste for storage room that they build extra-large drone-cells, which must be built at an upward angle or curve — too large and too slanting and too deep to be used for rearing drones.

The instance cited by Dr. Miller (page 166) may be accounted for in several ways. Perhaps he had little or no drone comb in the brood-chamber, and the queen laid eggs in the section of drone comb. If the honey-flow had let up by the time the drones hatched, that would explain it.

TRAVEL-STAIN.

There may be more than one cause for travel-stain — that is to say, there may be more than one kind of stain. But the kind the editor and Mr. Smith are talking about, the stain that "seemed to be in every particle" of the comb, is caused by a secretion similar to saliva, which secretion has a chemical quality, or else carries infinitessimal particles of matter which stain white sections, honey-comb, etc. This secretion is penetrating, and stains cappings and comb-walls through and through. One of its functions is to lubricate the bee's tongue and mandibles. We suspect that it has a chemical action which aids in the preservation of pollen. Like all other secretions it varies in amount. When bees are gathering nectar *rapidly*, loading and unloading their honey-sacs every few minutes, the quantity secreted is hardly appreciable, and the honey is white or clear. When gathering nectar *slowly*, more is secreted, and the honey is amber. Honey gathered very slowly contains enough of this secretion to make it yellow or dark. Thus it modifies the color of honey.

When bees gather pollen this secretion is copious. It moistens the pollen and protects the bee's tongue, and, we *suspect*, acts as an aid in preserving the pollen. Pollen always contains enough to stain yellow the walls of the cell in which it is deposited—this independently of any color-stain the pollen itself may yield. It may stain propolis also.

Bees clean house with their tongues. If any thing does not seem to their liking they scrub it with their tongues. As they do this the secretion is used, and this gives its odor and its stain to the furniture. We may suppose they brush foreign particles of objectionable dust from the honey in the same way. This continual cleaning of house by scrubbing with its tongue, etc., accounts for the kind of stain that Messrs. Smith and Root are discussing. It is reasonable to suppose, also, that bees, like all other animals, give off small particles of matter that aid this secretion in the work of discoloration. The effect of this secretion (probably helped by exudation) may be illustrated by the coloring of a meerschaum pipe. The same substance makes the pipe slightly yellow at first, then quite yellow, and finally a glossy black. The effect of this secretion on the combs, like the tobacco substance in the pipe, colors yellow at first, and finally black. This idea is not theory, but fact. We will furnish ample proof of its correctness if anybody wants proof.

NON-SWARMING BEES.

Apropos of Mr. J. E. Crane's argument that we can produce a breed of non-swarming bees just as we have produced non-sitting hens, is Mr. Crane really sure that the swarming impulse or instinct is rightly compared with the sitting impulse or instinct? Bees are different from chickens. There is the colony which perpetuates itself by brood-rearing; then the increase of colonies requires swarming. The comparison involves some fine points; but inasmuch as the bee can not live an individual life as chickens do, the question is whether the swarming instinct is not allied to the propagating instinct, which is universal and ineradicable. From this point of view one might contend that the production of a breed of non-swarming bees can be compared only to the production of a breed of fowls which failed to propagate. If it can be proven that the swarming instinct is comparable with the propagating instinct of fowls rather than with the sitting instinct, then Mr. Crane's argument fails; for non-sitting, we believe, results from an increase of propagating, or egg-production.

There is a limit to man's control in breeding to produce certain results. He can produce a cow that gives *more* milk; a sheep that bears *more* wool; a strain of bees that gather *more* honey; but has he ever produced a *new* trait, or been able to eradicate a primary instinct? He can manipulate what already exists, but

not create. Possibly the swarming instinct or impulse can be bred out: probably it can not. The possibility justifies trying. If it can be done at all, keeping the bees from swarming by dividing, etc., for years — for generations and generations of bees till they "forget," so to speak, the swarming idea, because not using nor needing it, would seem to be the method to adopt in order to produce "non-swarmers."

Higginsville, Mo.

[The name above, S. P. Culley, seems to be new. I looked over the index of several different bee-journals, but I did not find this name as one of the contributors. Nevertheless he writes as one having authority—that is to say, as one who apparently understands what he is talking about. I have been almost inclined to believe that he is an old writer under a *nom de plume*. As he hails from Higginsville, Mo., the place where the *Progressive Bee-keeper* is published, perhaps the editor of that paper could tell me. I do not dispute Mr. Culley's statements; indeed, what he says appears very reasonable; however, as he so kindly offers to furnish us "ample proof," we shall be glad to have him do so, as the knowledge of the actual cause might lead to a remedy.—ED.]

THE DRAGON-FLY.

The King-bird the Most Destructive of all the Enemies of the Honey-bee.

BY A. J. WRIGHT.

Considering that I have not "travel-stained" the pages of GLEANINGS since the June number of 1898, I may, perhaps, be pardoned for taking a little of your time and space.

It is said to be a fearful thing to teach. It certainly is a fearful thing to write. The writer of any article invites adverse criticism and comment. My article in defense of the dragon-fly, page 471, called out some criticism and comment, but I was pleased to note that the critics confined their observations to southern localities, and thus my position that the dragon-fly is not an enemy to bees in northern latitudes remains good. Now, I honestly think the truth is just this: The male dragon-fly is migratory — going south in vast droves in autumn, and returning in spring. The change in locality causes a desire for change in diet, and the dragon-fly that in the North in summer has feasted on mosquitos, flies, and moths, in the South may live almost exclusively on honey-bees. We know this peculiarity exists in many of our migratory birds, and is supposed to account in part for changes in the marking of plumage.

Speaking of birds, I consider the king-bird the most persistent and destructive of all the enemies of the honey-bee, of which I have any knowledge. I have a kindly feeling toward all of God's creatures, and will not needlessly inflict pain upon any; yet I always feel a degree of satisfaction when I succeed in bringing down this feathered glutton. It is very irritating to the bee-keeper to see this bird launch into the air and into the bees' line of flight, and, before retiring to its perch, pick up a dozen or more, and then, after throwing up the casting—as is done by all birds of prey —return to the attack with an appetite apparently as keen as ever; and when one considers that a single bird is capable of consuming upward of 100 bees daily, and that usually the family consists of the parent birds and from four to six young, we can easily understand that a family or two of king-birds in the vicinity of the apiary may mean the daily destruction of thousands of bees; and when we follow the flight of the bees to some distant pasturage, and find on the way several families of king-birds, all doing a thriving business, one is led to wonder how bees can be produced in sufficient numbers to make good the loss.

I have before me copies of GLEANINGS from March 1, 1898, at which time I first became a subscriber, to the present. I have been looking them over in a general way, and propose to comment upon some of the articles, referring to them by the title, and the page on which they appear in GLEANINGS, 1898.

WHAT KILLED THOSE BEES? (page 626).

The editor gives it up — thinks they might have smothered, but doesn't see how they could in the wire-cloth cage. This cage is just what killed those bees. Much of the wire cloth now in use is painted with green paint containing Paris green. The moisture and gases from a quantity of bees closely confined will soften this paint enough to cause a portion to enter the delicate breathing-organs of the bees, and cause death, and this is particularly true if the wire has been recently painted, and some dryer used in the paint.

HOW BEES WORK IN THE DARK, ETC. (pages 221, 393).

Oh, my! what a grand time is being made over the idea that bees can see in a dark hive, and the queen lay eggs on opposite sides of the comb, bringing the brood back to back! On page 221 the Rœntgen rays are suggested as a solution of the problem; also that the bees have two kinds of sight; and even the editor has dropped into both ideas as the only way of accounting for it. The latter idea is, of course, correct in the sense that one kind of sight sees in the light and the other in the dark.

The article on page 393 repudiates entirely the idea of Rœntgen rays, and tells us that the bees do fancy work in the dark on the same plan that the little sightless children do fancy work in a blind-asylum, and that the bees are probably, to all intents and purposes, as blind as the patients in the asylum, through whose optic nerves no ray of light has ever penetrated to the brain.

The mental acrobatic performances of the editor excite one's admiration; for, after having accorded to the bee the power of double sight, he now indorses the idea of total blindness when working in the hive. Now, this is too bad.

The organ of vision of the honey-bee is not

surpassed anywhere in all nature. The Creator has so made this organ that the bee can not only see in the light, but also in the dark, and fashion its beautiful comb with mathematical and mechanical accuracy; and yet its wonderful eyes are compared to the sightless orbs of the unfortunate blind.

The editor finally closes the article by saying that the science, theory, and practice of the writer on page 393 are all right, except the telephone, etc., and that all that the writer states sounds reasonable, and is the best article received on the subject, etc.

Honestly, now, Mr. Editor, *does* it sound *reasonable* that God has given to several of his creatures the power to see, and to perform their various duties, and pursue their pleasures in the dark, and has made the bee as blind as the inmates of a blind-asylum, and unable to perform the varied and beautiful operations of the hive except by feeling it all out? Is God so unkind to bees, and to bees alone? Away with the thought! It is not worthy of consideration.

We know that the cat, dog, mouse, mole, owl, fox, and many other animals can see as well or better in the dark than by daylight. Is it so exceptionally wonderful, then, that the bee can do this? and are our pets so inferior that they must be made to depend upon X-rays and the sense of touch for their wonderful work?

Now, Mr. Editor, I assume that you own a cat — a good mouser; also a dark closet or room — no windows — from which you can remove all the furniture excepting one chair. Now tie the legs of your trousers tight at the ankles; take a live mouse, the cat, and yourself into this place, and shut the door, being sure no light enters. You will find use for the chair. Now liberate the mouse and see how long it will be before you hear the sudden spring, the faint squeak, and the triumphant growl of the feline.

Now, will you say this was done by the sense of touch? Did Thomas or Tabitha just feel carefully around until she (or he) found that mouse? Not any. Now turn on the light, and you will find the cat has the mouse by the back of the neck, in exactly the right place to avoid its bite, and not injure the mouse. Now leave the room, closing the door, allowing cat and mouse to remain. Soon you hear the cat playing with the mouse, and all this in total darkness.

Now, Mr. Editor, if you wish to believe that bees are compelled to go groping and feeling their way about in the dark to accomplish their beautiful work, you are welcome to do so; but if you will give the matter candid investigation I think you will agree that the use of X-rays, blind-asylums, and the sense of touch, to account for the way bees work in the dark, is not tenable.

I suppose, after what I have said, I am expected to clear up the subject, and tell how bees see in the dark. Yes, sir; that is what I expected to do when I began this article, or, at least, to give you my idea of it; and to this end I must ask you, as a first and very important step, to get rid of the popular error that light is necessary to vision. That it is not, did space permit, I could prove by numerous incidents and experiments. All strictly nocturnal animals, birds, and insects, can see better in the dark than in full daylight. The divine Architect has so made the eyes of all nocturns that the rays of dark produce the image upon the prepared retina as easily as the rays of light produce it upon the retina of the human eye. To the nocturns, dark is the normal condition, light the disturbing element.

Another common error is that the pupils of the eyes of cats, owls, etc., expand as dark approaches, to allow more of the rays of light to enter the eye. On the contrary, the pupils are naturally expanded to admit the rays of dark, so necessary to vision, and contracted to exclude the rays of light.

Viewed from this standpoint, which I believe to be the true one, there is no more mystery in bees seeing in the dark than by daylight; and we can now sensibly understand how the queen can easily see to place the eggs opposite each other, and how all the operations of the hive are carried on minus X-rays, blind-asylums, etc.

HARD WATER AND PURE WATER (page 364).

A. I. R. thinks soft water was the drink intended by God for man. Not so, I think, or some natural provision might have been made for rendering it soft without making expensive machinery for softening a necessity, thus denying the intended blessing to the poor, and giving to the rich. No, I think the plan must have been that man should drink water both hard and soft. I believe much depends on the person and the surroundings. One brought up from infancy on soft water might possibly find a sudden change to hard water injurious, and *vice versa*. Of course, muddy, impure, and stagnant water should be cleansed before use.

I have known four persons upward of one hundred years of age, all living in one county, and comparatively near each other, not related in any way. The eldest was 126, the next 108, the next 103, the youngest (who died recently, 100 years and one month of age) was about and transacting business twenty minutes before death occurred. One person is now living there who, in one or two years, if spared, will reach the century mark, and is in fairly good health. Others have died there during the past winter who were upward of ninety years of age. The section is remarkable for longevity, and this in a region where hard water is the rule and soft water a rarity. Now, I don't say that hard water has done this, but certainly it has not shortened life, nor soft water been a factor in lengthening it.

The old Mosaic law forbade the eating of swine, but not the drinking of hard water. I believe the annual consumption of thousands of tons of scrofula-laden pork is responsible for more disease in the human family than all of the hard water drank from Adam's time to the present.

I have already quoted that it is a fearful thing to teach, and I believe that one who undertakes to teach another what he shall eat or drink takes upon himself a grave responsibil-

ity. It has been truthfully said that what is meat for one is poison for another. I have this day sent to A. I. R. a clipping from the *National Druggist*, stating that distilled water is a dangerous protoplasmic poison.

Bradford, N. Y.

[Years ago, when we were selling bees by the pound, we used almost invariably cages made of green wire cloth. At the time, I know it was said that such wire cloth should not be used; but we could never see that it had the least bad effect on the bees; and I was going to say we put up hundreds of pounds of bees in just such cages. If the green paint of the wire cloth became so dry as to pulverize so the bees utilized the actual Paris green, it might kill them, of course; but so far from that, if it did any thing it flaked off in small pieces.

With regard to the question of bees seeing in the dark, I do not see that I changed front. A little further on, in the same article, the same writer, whose opinions I indorsed, says: "Science will probably demonstrate the fact that bees have a set of eyes that can look at the most intense light, without any inconvenience, while other eye-facets see only at short range."—ED.]

FOUL-BROOD GERMS.

The Difference Between Spores and Bacilli: How One May Turn into the Other, and Vice Versa.

BY THOS. WM. COWAN.

I have read the correspondence respecting the destruction of foul-brood germs contained in honey, by means of boiling, and it appears to me that, when giving advice with respect to such a destructive enemy as foul brood, we can not be too cautious, and had better err on the side of safety than the reverse.

From the promiscuous manner in which many talk about microbes, bacilli, spores, or germs, it is quite evident that they do not realize that a very great difference exists between them; and conditions that will be destructive of the one may not have the slightest effect on the others. In respect to the particular organism with which we have to deal in foul brood; viz., *Bacillus alvei*, we have to contend with it in two different forms and stages of life, in one of which the vitality of the organism is easily destroyed; while in the other the same organism, but under a different form, is capable of retaining life, and germinating into the condition of the previous stage, even after what would appear the most damaging influences, such as long lapse of time, drying, heat, cold, and chemical re-agents. The bacillus condition is the first stage of active life of this organism; and it remains in this state, splitting and multiplying as long as it has nutrient material to live upon and other conditions are favorable. A bacillus is rod-shaped, and when, in process of time, it has attained full growth, it splits in two, each of these taking up an independent existence, and going through the same process; and as it has been shown that as many as two generations can be raised within an hour, and as the same rate of progression can be kept up by each individual in suitable nutrient media it is not astonishing that foul brood spreads rapidly.

Now, while in this bacillus stage it is not difficult to kill the organism (a temperature under 160° F. will do it), and there are a number of chemical re-agents which even in great dilution will destroy bacilli. It is, however, very different in the subsequent stage of existence of this microbe. When the bacilli, or rods, have multiplied to such an extent as to exhaust all the nutriment upon which they were feeding, or come in contact with surroundings inimical to their active existence, the rods gradually turn into spores. At a certain point of the rod a bright speck appears, which gradually enlarges at the expense of the protoplasm in the rod, until in its fully developed state it assumes an oval shape. The sheath swells, and the bacillus looks much thickened; then the sheath breaks, and the spore becomes free. Now, it is when the rods have become spores that the danger arises, because it is very difficult to make many understand the great difference between them and bacilli. They are analogous to seeds of plants, although they differ from these in possessing greater vitality. Spores retain the power to germinate into bacilli after the lapse of long periods; and Dr. Klein, one of our great authorities, says, "There is no reason to assume that these periods have any limit." We have, at any rate, had ample evidence in our own experience to show that spores have retained their vitality for many years. These spores are not only capable of germinating into bacilli after a long period of time, but will endure heat, cold, drying, and chemical re-agents—influences that would be destructive to bacilli themselves. The temperature of boiling water does not destroy them unless considerably prolonged, although a very much lower temperature, as I have already stated will kill bacilli. If we had to do with bacilli only, in every case bringing up the temperature to 212° F. would be amply sufficient; but with spores it is different. A few minutes' boiling will destroy some, because all the spores have not the same degree of vitality; and in this they resemble seeds of plants. It is well known that some seeds will germinate much sooner than others, and some will not germinate at all. Experiment has shown that, to destroy all the spores, prolonged boiling is necessary, or they must be subjected to a higher temperature, such as is obtained from steam under pressure. Spores are unable to withstand steam, even for a few minutes, at a temperature of 212° F.; but this could not be applied to honey, as the spores would have to be separated before they could be acted upon by the steam. I have had frequent demonstrations that many do not really understand what boiling, from a scientist's point of view, is, and that is why the results are frequently so different. They are content to think that the liquid is boiling if they see it bubbling, whereas the bulk of it may be several degrees

below the boiling-point if stirred and thoroughly mixed, and, of course, the larger the quantity the longer it takes to raise the whole mass to the boiling temperature. Experience has shown that it is not safe in every case to depend upon 10 or 15 minutes' boiling. Several boilings would be better, but not so convenient to the ordinary bee-keeper. The rationale of this is that, at the first boiling, all the developed bacilli are destroyed; then suppose a nutrient medium and other favorable conditions to exist in the honey, the unaffected spores would germinate into bacilli, and could be destroyed in the next boiling. A third and even a fourth boiling might be necessary to destroy the remainder. Failing this method of procedure, it is safer, with our present knowledge of the behavior of spores, and taking into consideration the appliances at the command of the average bee-keeper, to insist on prolonged boiling.

April 18, 1899.

[Mr Cowan did not go on to tell of his experiments to prove his statements above. These statements, coming as they do, from, I verily believe, our best authority on the subject in hand, ought to settle the matter that it is not safe to feed diseased honey back to bees that has been boiled only 15 minutes.

Instead of recommending three hours' boiling, I shall recommend an hour's boiling at three different times. After all, it seems to me utter folly to extract honey from foul-broody combs because of the great danger in the process. It is far better to burn them entire—frames, brood, honey, and all—and then bury the ashes where neither plow nor spade will ever touch them. I would err, if at all, on the safe side.—ED.]

RAMBLE 166.

Portland, Oregon.

BY RAMBLER.

Between showers I made a very pleasant call upon Mr. Buell Lamberson, who is proprietor of a large store for the sale of seeds, agricultural implements, and bee-keepers' supplies. Here I found a full line of the Root supplies, and Mr. Lamberson is headquarters in that line for Oregon and Washington, and has sold as high as two carloads in one season. He said that bee-keepers were well pleased with the supplies, and that the Root hive was preferred to the home-made; but owing to the cheapness of lumber it is a dollars-and-cents argument that makes the home-made Oregon hive take the lead. Although there is a healthful trade in supplies, Oregon does not produce a great amount of honey.

A very good way to diagnose the healthfulness of the honey production and bee business generally in any State or location is to find out how many carloads are shipped out. If, instead of shipping out, there are carloads shipped in, the industry is not upon a very strong commercial footing, and that is the present condition in Oregon.

California honey is in evidence in many of the groceries, both comb and extracted. The latter is put up in neat screw-top tumblers with a piece of comb honey surrounded with a liquid, presumably honey, and perhaps it is. Honey from Utah and Nevada also finds its way into this portion of the country.

While I give an occasional glance from my fifth-story window I realize that I am in one of the most thriving cities of my native land. The population is over 80,000. It is a port of entry for the largest ocean vessels, and the various craft plying on the river-front present a busy scene. The trade in grain, lumber, wool, etc., is immense.

At the date of my visit the city was shorn of much of its beauty, for the falling leaves left the many trees unadorned. The moist and sticky condition of the streets was not pleasant; but being used to dry streets and plenty of dust and evergreen trees in California, the change seemed agreeable. When the clouds lifted enough, Mount Hood appeared in the distance with its pure white snow-clad peak. It is the boast of the good people of Portland that five of these snow-clad peaks can be seen at all times of the year when the weather is fair. I barely saw Mt. Hood, which proves that the weather was very unfair to me.

I spent a very agreeable Sunday in Portland. The Congregational church, where I attended, was well filled, and with as fine an array of fashionable fall bonnets as can be anywhere

found. But the most agreeable service was at the Y. M. C. A. in the afternoon. There were a few bald pates, but not a bonnet; and let me tell you Portland has a Y. M. C. A. that is worthy of emulation. It has 1000 members. Surely such a body of well-meaning moral young men is not without a leavening influence upon the city. I might tell you much more about this thriving city, but I must hasten along to the State of Washington.

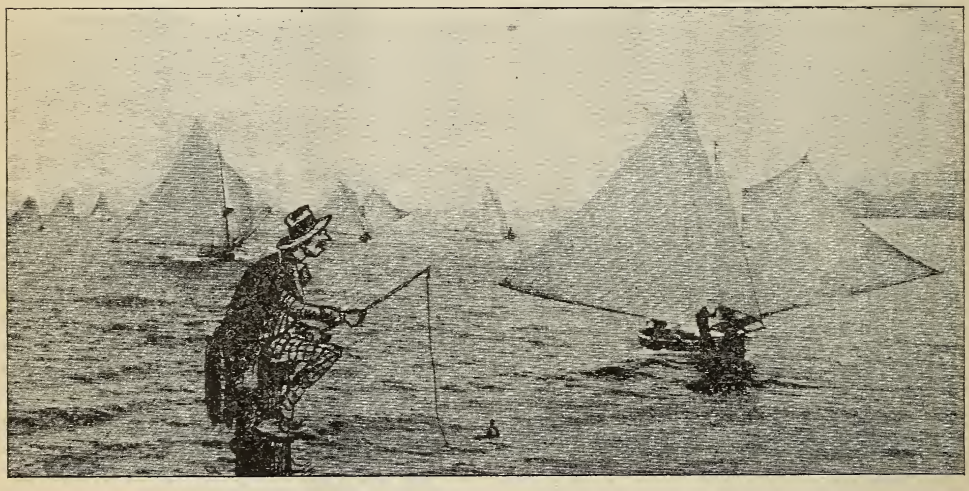
I first placed my feet on the soil of this great State by running out on the electric-car

line from Portland to the Columbia River, six miles, crossed the ferry, and here we are in Vancouver.

Uncle Sam has a military post established here, and it is the army headquarters for the Northwest. Four companies of the Eighth California Volunteers were located here, and there were soldiers at every turn. When passing up the street I saw a corporal and a private in conversation on the street-curbing; and, stepping up to the corporal, I slapped him on the shoulder, and exclaimed, "Hello, Will R——!" I really believe the corporal would not have been more astonished had I arisen from the muddy street before him. "Why—why, Mr. Rambler, where in time did you come from? Did you rain down?" The corporal was one of our California boys with whom I had a slight acquaintance, and I was very glad to surprise him and tell him about the folks at home. We had no more than passed the compliments of the day before the corporal gave the other soldier and myself a cordial invitation to take a drink. There was a saloon handy, and we entered; but I told my friend that I did not drink. He tried to impress me with the idea that there is a vast amount of healthfulness in a glass of beer, but I could not see it in that light, and touched not the vile stuff.

The corporal then escorted me out to the parade-ground, the officers' quarters, the rifle-range, the barracks, and—into the army canteen. Here the corporal, having forgotten my refusal to drink beer with him, or else thinking I needed something stronger, gave me an invitation to take a whisky cobbler. Well, he cobbled and I didn't. Several soldiers were patronizing the canteen, and I judged that the name was far too respectable for the place. I regretted that Uncle Samuel was engaged in such a disreputable business. In talking with the corporal about the matter he acknowledged that there was a drinking element in the army, and that they had rough times with them sometimes, and that matters would be more peaceable if the canteen were banished. Let us hope that Uncle Sam will come to his senses ere long, and suppress the evil. This was my first and only experience with the army canteen, and I hope it is the last.

A great majority of your readers are located in the Eastern States, and I am wondering how many of them ever give any thing more than a passing thought to this portion of our country, or have much of an idea of its extent and resources. The Columbia River, which I have crossed twice to-day in my short trip to and from Vancouver, with its tributaries, drains an immense country; and in point of scenery it is one of the grandest rivers on the continent. For its watershed it has Washington, Eastern Oregon, Idaho, and a portion of Montana and of British Columbia. A good share of this 600,000 square miles is undeveloped; and again I wish to say to the weary



toiler on the stony hillsides of New England that 20 acres here will give better results than 100 there. Young man, if you have any enterprise in you, come west.

Mr. Lamberson gave me the names of a few of the local bee-keepers; but when I undertook to hunt them up I found this one had moved, that one had sold his bees, and the other one had gone fishing, or, in other words, given up bees for salmon-fishing, which is an immense business on the Columbia River. A fleet of fishing-smacks makes such a pretty appearance that I wouldn't mind joining myself to them for a season. Fishing and honey-production would not be a bad combination. It makes a great difference, though, what kind of fish we are after. I knew a bee-keeper back east who had a sort of dry-land fishing experience. Her name was Fish. He bobbed for her, tried to reel her in, paid out and tackled; but the fish sulked, the lines got tangled, and the bee-keeper made a dismal

failure of it. Come west, young man; here is the right kind, and fishing that you can tie to.

We think we are doing the appropriate thing in Southern California when we have a bee-keeper by the name of Honey; but here in the northwest portion of Oregon there is a town named Apiary; also a man bearing the same name. I wanted to get out to that place to find if they were properly joined to a bee-apiary; but if you had seen the water drip off my hat-brim you'd have given it up just as I did. I was fortunate, though, to stumble upon an honest German bee keeper who seemed willing to impart information upon the resources of the country, and we had quite a little convention.

"Yes, I vas a bee-keeper," said he; "I lifes out in Yamhill Co. I hafs one liddle ranch of sixdy acres. I hafs brunes, cherries, vruits all kindts, unt I hafs veat; my ranch vas brosberous, so much more so than any oder ranch."

"But," asked I, "did your bees prosper?"

"I dells you; my veat vas the best yieldt in Yamhill Co. Eferybody ven they saw dot veat they shoost stopped in der middle of der dracks, unt said it vas shoost vonderful."

"Was your wheat-field the only one in that vicinity?" said I.

"No, mine frient; eferybody has veat; but you must know how to raise veat. It vas my blan to blou deep; den ven de veat gomes a leedle up I puts a harrow ofer it. Eferybody say dot olt Tuchman cot crazy mit his head, but I ton't. It is so vet here somedimes dot de verns shoke de veat; blou deep, unt harrow, unt de veat crows like eferydings, unt de verns don't crow."

"But how about your bees?" asked I again.

"Yes, dose pees. I had ofer one huntret svarms ven I lifed in Michigan. I had some-

dimes seex tousant pounts of honeys. I made some moneys. Michigan vas one goot State for pees."

"But how is it here in Oregon for bees?" asked I.

"My frient, it is too vet; somedimes the pees make goot zweet honeys, but it is too vet, too vet. Ven I lifed in Michigan I could prag apout my pees all tay long, und my vrow could prag all night, so ve praged all de time apout de pees; but ve prag here apout our veat unt our brunes. No, it vas too vet here to prag apout pees."

I regretted very much that I could not meet a bee-keeper here who could "prag" about his bees. I think there are plenty of them, and I shall have to try Oregon again when the weather is not so wet.

ANSWERS TO SEASONABLE QUESTIONS BY G. M. DOOLITTLE

"PROOF OF THE PUDDING IN THE EATING."

Question.—I use the Gallup frames, or at least supposed I was using that frame, till I read what Mr. Chas. Dadant has to say on pages 257 and 258 of GLEANINGS for April 1. Since reading his article I am not so sure what kind of frame I do have. The frame I have always called the Gallup is $10\frac{3}{4} \times 10\frac{3}{4}$ inches, inside measure, which figures out $115\frac{3}{4}$ square inches of comb to the frame. And as "Langstroth on the Hive and Honey-bee," as revised by Chas. Dadant and Son, gives, on page 40 of that book, 55 as the correct number of cells to the square inch of comb, I figure that one of my combs contains 6366 cells in place of the 4600 given on page 258 of GLEANINGS; while nine such frames would give 57,294 cells instead of 41,400, as Mr. Dadant gives, or more than one-third more than he allows. What is the trouble? Am I not using the Gallup frame? or does Mr. Dadant make a mistake in figuring?

Answer.—If the questioner has "The Bee-keepers' Guide, or Manual of the Apiary," by A. J. Cook, and will turn to page 191, he will find the dimensions of all of the frames in general use, with cuts of the same. The size of the Gallup frame, as there given, is $11\frac{1}{4} \times 11\frac{1}{4}$ inches, outside measure, and as Prof. Cook says such frames are made of stuff $\frac{1}{4}$ inch thick, it will be seen that the questioner has given the right inside dimensions of the Gallup frame, on the authority of Prof. Cook, and as Gallup used to give it, which is the same I use. I can not see any flaw in the questioner's figures, hence can only come to the conclusion that Bro. Dadant is ignorant regarding the size of the Gallup frame, or thought to make a stronger case by being unfair with what he placed before the readers of this journal. I can hardly believe the former, and would suppose that he would realize that the latter would only tend to injure his case, for such a course gives credence to the idea that all of the rest of his arguments and statements may be as erroneous as this one is; and, if so, the whole of his logic is based on false premises, which can not give stability to the structure he is trying to build. Mr. Dadant tells us he "noticed that a queen lays about six eggs a minute, 360 an hour, and 3600 in 10 hours, 75,000 in 21 days." This figuring is about on a par with that about the Gallup

frame. If a queen lays six eggs in a minute, 360 an hour, 3600 in 10 hours, why does she not lay 8640 in 24 hours and 181,440 in 21 days? Will Mr. Dadant tell us? An eleven-frame Quinby hive would be as poor for any queen laying at the rate of 360 eggs an hour, right along, as Bro. D. tries to make out that the nine-frame Gallup is for the average queen. But all of this figuring regarding how many eggs a queen *can* lay, and then basing the size of the brood-chamber on such egg-laying powers, amounts to very little. The proposition before the practical apiarist is not *how many eggs a queen can lay*, but *what size of brood-chamber will give me the best results in surplus comb honey?* And how can this point be ascertained? Very largely through the average yields during the past, where reports have been given by those using the large frames in a large hive without any contraction, and those using small hives, or large frames with contraction. Bro. Dadant gives an instance where a colony in a large hive gave him 160 lbs. of comb honey which he sold at 27 cents a pound, the result from which would be $43.20.

In back volumes of the bee-papers can be found my report of a colony having but nine Gallup frames which gave 309 lbs. of section honey, and plenty in the hive for winter. This honey was sold for 25 cents per pound, the result from which was $77.25. Does this not show that the "proof of the pudding" lies with the small hive? But I hear some one saying that "one swallow does not make a summer." Very good. Bro. D. says his neighbor called him a "braggart" because he claimed that his bees gathered 100 lbs. or more per colony. And some of my bee-keeping neighbors would not believe that a whole apiary gave an average yield of 166⅔, nearly all of which was section honey, till they came and saw my shop so crowded with beautiful combs of honey that the floor had to be propped to keep it from breaking down, when I used a hive only about two-thirds in size of brood-chamber as compared with theirs. But leaving Bro. Dadant and myself "out of the race," who have given the best reports during the past—those using the large frames and hives without contraction, or those using the small hives or the contraction plan? I have been a careful reader of our bee-papers during the past thirty years; and, unless I have read in vain, the majority of the good to large yields of comb-honey reports have come from those using small hives, or those contracting the brood-chamber during the honey-flow down to that used by those recommending small hives. It was just these reports that caused me, *unwillingly*, to cut my twelve-frame Gallup hive down to a nine-frame hive. If the large hives are so much better than the small, it seems to me it is about time they showed their superiority by giving better average reports than the small ones; and until they do, I shall feel that I am excusable in keeping on in the beaten path of success; and trying to make it appear that Doolittle "is always watching his sixty hives" when my colonies have been numbering from 120 to 200 each year since father's death, does not add any thing toward the large-hive side. During the five years I lifted and cared for father, every time he was moved at all, I had to let my numbers go down to what I could care for, and care for father too, and the 60 would be about right for those years.

Then I see that better wintering comes in as a recommendation for the large hive. But the one who is familiar with the past knows that whole apiaries, where the large hives and frames were used, have been swept away by "our wintering troubles," and the proprietors gone out and bought bees, which wintered in box hives, to stock up with again.

That report, dated Feb. 15, reading, "We have just had a good day for the bees. The colonies are strong. There is next to no loss," fitted my case exactly at that time, except the "we have just had a good day for the bees." My bees had their last flight Nov. 10, 1898; and after that there was not a single "good day for the bees" till April 12, 1899, and colonies that were strong and fine Feb. 15 were so loaded with excrement on April 12 that their strength and vitality were not sufficient to fly to void it, the result of which is that eight out of the seventeen colonies wintered out are "little good," while nine are from fair to strong.

I have never been able to understand why those living in a locality where bees can fly every four to six weeks should begin to tell of their losses after three or four weeks of cold weather, when our bees have to hold out during three to five months' steady confinement, with the mercury often down from 5 to 25 degrees below zero for days at a time; and as they more often come through such winters in good condition than otherwise, in the nine-frame Gallup hive, I may be excusable for thinking that the size of the brood-chamber has little to do with the wintering of bees. If I lived where bees could fly once in six weeks I am sure I should feel as Bro. Dadant does, that "the bees were not as healthy in the spring" when wintered in the cellar, as those wintered on their summer stands.

Some of this may be considered as a "ramble," for I have not stuck very closely to the question My excuse is, that, after I received the question, I read Bro. Dadant's article over a second time, so allowed a few thoughts on it to come in, outside of what the questioner really expected from me.

Borodino, N. Y., April 14.

[Now look out for the Dadants.—ED.]

OUTLOOK FOR FLORIDA.

The outlook for honey in West Florida is not very promising. Just as the titi bloom was opening it was destroyed by the zero freeze. The Le Conte pear-trees were in bud, which was turned brown, and fell off.

These trees bloomed again in about a month, and on some trees a small amount of fruit set. Much of this will probably fall off. The Kiefer pear-trees are later in blooming, and do not appear to have been injured in the least, and have set fruit abandantly.

The loss of the early bloom has been a great detriment to apiaries, and those that I have seen are weak, and some colonies starved, while others will barely pull through until the palmettos bloom. In some localities the surplus is gathered from tupelo.

The spring has been rough. When the sun was shining there would be a cool cutting wind. I saw some beans to-day that bore evidence of a slight visit from Jack Frost. Newly planted trees have done well, and a few orange and fig trees that have been cut down are sending up shoots from the roots.

MRS. L. HARRISON.

St. Andrews Bay, Fla., April 4.

THAT HORSE-STINGING EPISODE; CRUELTY TO ANIMALS.

In the name of our God, are you going to sit there in enlightened Ohio and publish such letters as that from Geo. L. Vinal, of Charlton, Mass., page 272, April 1, without one word of protest against such brutal inhumanity, such treatment of our silent friend, the noble horse? To place a swarm of bees where they would sting a horse for twenty minutes is simply hellish; and no man with a spark of humanity within him would for an instant entertain such a thought. Could the bees have been turned on the tormentor of the faithful old horse, it would have been a pleasing feature of the program. A great society for the prosecution of such offenders has headquarters in Boston. I shall write there at once, and see what can be done in the matter. H. M. JAMESON.

Corona, Cal., Apr. 10.

[I will explain to our readers that articles from old correspondents are not read by the editor in manuscript, but are read in galley-proof, at which time the headings or footnotes are dictated; but it seems the communication from Mr. Vinal did not come before me until it appeared in page form; and as that form was ready for press I did not enter the protest that I really felt in my heart. If I had it to do over I would hold the form back an hour or two for the sake of a footnote. But Mr. Vinal is an old and valued correspondent.

Let us turn back to page 272, April 1, and read the item again. If I mistake not, Mr. Vinal is an "M. D." Having had a horse accidentally stung once, and seeing no apparent loss of bees, it appears that, from the standpoint of a physician and of a scientist, and solely in the interest of science, he desired to pursue the investigation a little further. There was only one thing to do, and that was to get another horse and harrow up a lot of bees. This seems cruel, and so it was; but, if I mistake not, the Humane Society sometimes allows certain experiments to be conducted, in the interests of science, that they would not allow where mere curiosity is the only motive. But the horse that Mr. Vinal refers to was evidently not killed, as he did not allow it to be stung severely enough to cause death.

Referring again to Mr. Vinal's experiment, I am of the opinion that it would prove of but little value. When there is a general stinging of this kind, one generally imagines there are thousands of bees engaged in the operation, sticking in their little jabbers. One time I was fearfully stung, and it seemed to me that at least 500 bees must have punctured my epidermis; but actually there were less than a dozen stings. I should say, then, that probably not over twenty-five bees stung the horse that Mr. Vinal refers to; and the fact that the colony from which these bees came pursued their normal course, as before, would indicate nothing, for the loss of twenty-five bees could not in any way really affect the prosperity of a strong colony.

I hardly think it necessary to go to the extreme of seeking Mr. Vinal's arrest, for he is a gentleman, and a man of high moral standing. A mere protest would accomplish ten times more than an arrest.—ED.]

FEEDING AFTER FRUIT-BLOOM.

Last year (I've had only a few bees two years) my bees came out in the spring with lots of stores, and they raised brood in abundance until after fruit-bloom, when nearly all the brood-frames were full; but at the beginning of clover harvest (along about the 1st of June) they had practically no brood. I want to know if I should feed after fruit-bloom to keep the combs full of brood until the clover-flow begins. THOS. S. WORK.

Clarington, Pa., Apr. 7.

[Conditions and circumstances should govern in all cases. Last season, if you expected a flow you should have fed soon after fruit-bloom. The fact that brood-rearing had stopped was a pretty good indication that bees were verging toward starvation; and as a result they curtailed their brood-rearing. —ED.]

SOMERFORD'S METHOD OF FORMING NUCLEI; A CAUTION.

Friend Root:—In regard to the method of increase given by W. W. Somerford, page 260, you had better caution your readers to be *very* careful in warm weather, for I have seen great damage done, and many nuclei utterly ruined, by melting down when stopped up as friend Somerford recommends. Especially is this the case if the nuclei are more than ordinarily strong. I have made hundreds of increase in the way he advises, and it is a good one, but there are much better ones.

We had heavy snow one week ago, and yesterday we had a fall of over a foot—very backward spring, and many bees are dead.

E. T. FLANAGAN.

Belleville, Ill., Apr. 4.

[Your caution is timely. In any case, one must use his judgment.—ED.]

SINCE about the 15th of April this has been almost a model spring. It is still warm and nice, and fruit-bloom is just opening up.

WE just received a dozen queens by mail, direct from Italy. Ten of them were alive, but one of this number was feeble, and may not survive. We are glad to say now that getting queens direct from Italy by mail is a success. But we prepare the cages ourselves with sealed honey and Good candy; and all the breeders in Italy have to do is to put in the bees and queens, put stamps on them, and they are ready, for our address is already printed on the cover. In about two weeks more we shall be getting another consignment, and after that more queens as orders may require.

A PROMINENT bee-keeper writes that in his vicinity the winter losses have been almost as severe as during the winter of 1881, which was the most severe that was ever recorded. Fortunately this condition is by no means general. Owing to the very favorable spring thus far, and the fact that fruit-bloom is just out, brood-rearing is going on at a very rapid pace at our home apiary. Many of the colonies are weak; but if they can have a few more days like this they will nearly recover what they lost during the severe cold spell. New honey is coming in, but very slowly. As soon as fruit-bloom is out a little more, we shall, of course, expect a little more honey.

SHED APIARIES IN CUBA; EXPENSE OF ROOFED APIARIES.

AT the request of a subscriber we reproduce elsewhere the two engravings that appeared in our issue for April 15, 1895, showing the Cuban apiaries operated by A. W. Osbun, some 700 hives, all under one roof, having an area of something like 17,000 square feet. The main shed is 300 feet long, and is crossed by two others of about the same length. Mr. Osbun's average crop of honey at that time was something like 60,000 pounds annually; and it was his intention to run the amount up to a quarter of a million. Somewhere about a year ago he died, and, as our readers know, we have had one article already from his son, who writes under the *nom de plume* of A. W. Osbun's son.

As there has been so much interest manifested in Cuba of late, it seems it is proper to give our readers an idea of the expense involved in putting up an apiary in that hot climate. If I understand it rightly, it is almost a matter of necessity to put the hives under a shed, and the shed itself is where the expense comes in.

In order to make the business pay, as the price of honey is so low there, one has to produce the honey on a very extensive scale.

The illustrations referred to elsewhere will give one an idea of the magnitude of the business carried on by Mr. Osbun. Whether these sheds remain after the cruel ravages of war, is doubtful; and while the locality may still be good when conditions have readjusted themselves, one should understand that it would require capital to carry on bee-keeping in that climate.

NO-WALL FOUNDATION.

IN the *Bee-keepers' Review* for April Mr. T. F. Bingham is quoted as saying:

> I take a little modest pride in the illustrations, comments, and promises given on page 218 of the current volume of GLEANINGS. I say this because the Michigan bee convention, held at Mt. Pleasant in 1896, raised the money for the making of the first machine that would make no-wall foundation. GLEANINGS says it does not "know for sure just what shape the ideal foundation will take." In this connection it is worth while to notice that not one adverse report has ever been made against the no-wall foundation. To be sure, it has not been extensively used in many apiaries; but it has realized the expectations of its designers.

Either I misunderstand Mr. Bingham or else he has missed the whole pith of the article published in GLEANINGS on page 218. I did not, as the article shows, in any way indorse the no-wall foundation. If there was any point that I tried to make clear, it was that a *wall* was an important desideratum; that a thin base was another one equally important. A no-wall foundation with bases as thin as bees make them can not be milled, because it would pull to pieces in making. Accordingly, it has to have base made just enough heavier to permit of its being manufactured. This makes, of necessity, a heavy base, comparatively, but no heavier than in some of the grades of super foundation with walls. The photos, as I have shown, clearly illustrated that, no matter what the thickness of the wall, if the base only is thin, there will be a no-gob foundation, for the wall is almost invariably thinned to natural thickness. It is possible to make a thin-base foundation with the proper appliances, *providing there is wall enough* to support the sheet while it is being milled, or handled in the plates. The difficulty of making no-wall foundation, even with a base as thin as the bees make it, is a mechanical one. Aside from that it would have a decided tendency to warp and stretch in the hive. Even making it as they did with a thick base, comparatively speaking, it had a tendency to warp in the hive, as was shown a year ago in the *Review*. It is possible that Mr. Bingham means that we are both working toward a no-gob comb honey. If that is his idea, we are moving toward the same goal, but over different routes.

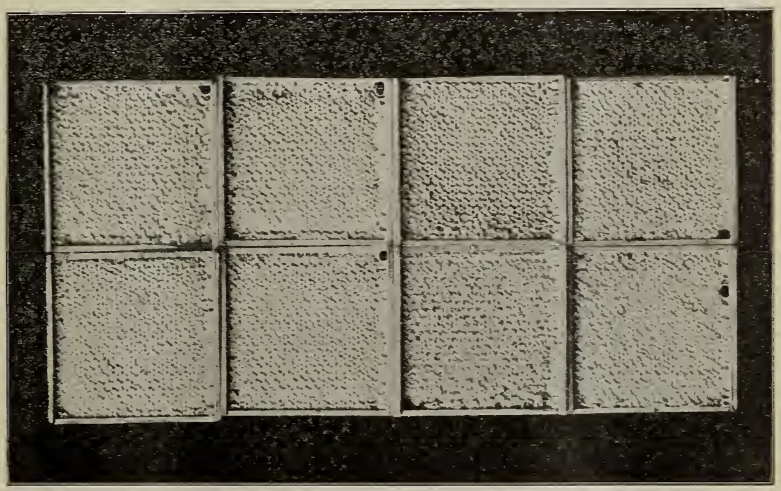
EXTRA FANCY HONEY IN BEEWAY SECTIONS.

IN the *Canadian Bee Journal* for March, p. 497, appears an illustration of some very fine honey in beeway sections. We have secured the loan of this cut, and herewith present the illustration. This honey was produced, if I mistake not, in one-piece sections; but instead of having ordinary beeways the openings extended clear to the sides, the same as in the four-piece section. This gives a little freer

communication up and down, doubtless resulting in a little better filling, as shown. These sections were taken in a super with section-holders having open tops (no top-bars), and the separators 4½ in. wide without slats.

The specimens of honey shown were not an average, of course, but probably the best there were to be found in that particular lot. I have shown one or two specimens of honey in plain sections, that were better than the average. But all such cuts are apt to be misleading to a certain class who gather the impression they will always get just such honey if it is produced in such appliances. On the other hand, there is another class, old practical beekeepers, who know it is not possible to secure that degree of perfection, on the average, with any appliances that were ever devised, or with any strain of bees.

I reiterate, as I have several times before, that, *under like conditions*, plain sections will be filled no better than beeway sections; and if there are any of my remarks that can be construed otherwise, I desire to repudiate any such construction as emphatically as I know how; or, to put it another way, beeway sections may be made so that the conditions, so far as freer communications are concerned, will be precisely the same as the conditions under which plain sections are supposed to be filled. The illustration taken from the *Canadian Bee Journal* shows a set of sections that were produced under *a part* of the conditions we desire to secure when producing in plain sections. I do not believe that combs in any ordinary one-piece section with the *old-style openings* can be produced as perfect and as pretty as there shown. If any one has ever accomplished the feat, let him have a photo of them taken, at our expense, and I will present it to the readers of our journal.



FANCY COMB HONEY IN BEE-WAY SECTIONS.

But it is, nevertheless, true that the *design* of the fixtures has something to do with the appearance of the honey. For instance, I believe that the full openings in the sections above shown have a tendency to make more even and fuller combs. The section shown on page 82, Feb. 1, 1898, shows a nice comb in the ordinary one-piece section having the *ordinary beeway*. This narrowing-up of the opening has a tendency to round or bevel the combs at the corners as there shown. Partly for this reason, and partly on other grounds, there are many who prefer the *four-piece* sections with top and bottom-bar of the same width throughout.

A better beeway section, in my judgment, is the one that is not only open full width, top and bottom, but is open part way down and up the sides. The demand for these seems to be growing. The freer the lateral communication, the better will be the filling of the section. With such a section, an ordinary slatted separator without cleats ought to secure just exactly as nice honey as in a plain section with slatted separator with cleats.

"SUPPLY-DEALING EDITORS."

THE heading above is taken as a text from an editorial paragraph by Doolittle, in the *Progressive Bee-keeper*. I did not refer to the matter in the way of a reply, at the time, because I thought in view of the fact of our being interested in supplies we should keep still; but as Mr. Hutchinson takes up the matter, and discusses it a little further, perhaps I ought to say something in the way, not so much as a defense as an explanation.

Mr. Doolittle, in the first place, in the *Progressive*, raised a protest against certain so-called "crazes" now going on in the bee-papers; that the pushing of plain sections and separators was ill advised, and that they were on a par with the reversible-frame excitement, deep-cell comb foundation, etc. Mr. Hutchinson, in commenting on this, is of the opinion that Mr. Doolittle's caution is timely. He

believes that, while GLEANINGS has pushed new things too hard, both the *Progressive* and the *Canadian Bee Journal* have gone to the other extreme in condemning them—so much so that no one would even give them a trial. He further believes that an editor ought to be very careful how he allows his journal to boom a new thing—yes, or condemn it till repeated tests under varying conditions have fully determined its value. In general, this is good doctrine. I have preached it myself, and I try to practice it, as I shall show. He then says :

> I am willing to admit, and have admitted, my *belief* that the use of plain sections and fence separators leads to a more perfect filling of the sections. I think that any one who is not prejudiced will admit this upon seeing a crop of honey thus produced. If this is a fact some may ask, what is the objection to "booming" them? I think that there ought to be some further attempt to discover exactly what it *is* that causes the more perfect filling. The fact that the section is the same width all around can not possibly have any bearing upon the subject. It can make no difference whether the side-pieces of the sections extend out and meet the separators, or pieces on the separators extend out and meet the sections. One is exactly equal to the other. It seems as though the freer communication afforded by the open separators was the only point left. In opposition to this view, Mr. Daggitt recently called attention to the fact that sections filled without the use of any separators whatever were no better filled, if as well, than those where separators were used.

Both Mr. Doolittle and Mr. Hutchinson have, without knowing all the facts, taken a natural view ; and if I were in their shoes I would doultless think and write as they do, and if they had been in our shoes they would have done as we have done. But there are some things that they have either lost sight of or else have not fully considered.

In the first place, Mr. Doolittle speaks of the new fence and plain sections as a "craze," and as if they were new things, and would probably be abandoned like reversible frames. If they had not been used for a period of something like ten years by three or four prominent bee-keepers, in more or less modified forms, the statement might be correct ; but fence separators are an old thing. I do not in any sense regard them as an experiment. Plain sections have been used by Mr. Aspinwall for about ten years. Fence separators have been used by Miles Morton for about the same length of time. The same general scheme was advocated years ago by that practical bee-keeper, Mr. B. Taylor, by Walter S. Pouder, and by others. The same goods as we make them were tested last season by a good many ; and out of all the hundreds and hundreds who have begun to adopt them, there are only three or four, possibly more, who are not entirely satisfied. This is remarkable when we consider the many favorable reports that have come in.

It will be remembered that thick top-bars were an old thing, and had been used for years by J. B. Hall and others, long before Dr. Miller and I began to push them into prominence ; and even Doolittle,* at that time, opposed them, although he is now a user and advocate of them. What is more, they are used and recommended by nearly all of the bee-keepers.

Self-spacing Hoffman frames were another new old thing. They had been used some twelve years previously, and now there are hundreds of bee-keepers who will swear by them. I do not and never did recommend them for every one; but there are many who would never use any thing else.

It was GLEANINGS that began to champion the dovetailed (or, more correctly speaking, the lock) corner in hives, another old device; and now hives having that feature are sold almost exclusively by us and very largely by our competitors. In hot climates they stand the test.

I believe I have seldom helped push into prominence, or tried to do so, something that had not been previously tested by practical bee-keepers years before; and in going on that rule GLEANINGS has made very few mistakes, comparatively. Nearly every thing she has advocated has come to stay, or it appears that way. I do not say this with any boasting spirit, but because I believe it is the truth.

Drawn foundation is referred to as having been advocated by myself, and finally having been designated as a failure in one way, and perhaps it was. It was Doolittle, as well as myself, who helped push this forward, and Doolittle was all right, even if it was a craze. It cost Mr. Weed and us something like $2000 to make the necessary experiments and the necessary dies. We disposed of, all told, perhaps 200 lbs. of the product. Certainly this small amount, much of which was given away, distributed among a few bee-keepers, could have cost them little or nothing. So long as the supply-manufacturer and inventor in this case, were the loser, I can not see how bee-keepers lost by this venture. On the other hand, they gained a lot of valuable information, and we certainly feel that we have; for out of it will come and has come the development of the new thin-base foundation.

The reversing idea has been abandoned, it is true; but I believe there is a good deal in it yet. We sold very few reversible frames, yet many who tried them are very much pleased with them. I remember particularly the case of Mr. Chalon Fowls, who, I believe, is still using them. But suppose that this is a device that was abandoned. In order to make progress in any branch of industry, some things have to be tried and discarded. In the apicultural world it would be strange if something did not have to be thrown overboard.

Automatic swarming-devices not mentioned by Messrs. Hutchinson and Doolittle, were a good deal talked about at one time; but no one really pushed them; and after perhaps two or three dozen had been sold they simply dropped out of sight. The Simplicity hive was abandoned as another example; but it had a run of about fifteen years, and those hives are still good where used. If we have something a good deal better it would have been folly to continue making new hives with beveled edges, because there are new generations of bee-keepers coming up, who, of course, want the better things.

* Perhaps the pushing of tall sections, another new old thing, might be called a craze. If so, I got my inspiration from Doolittle, Capt. Hetherington, Danzenbaker, and others.

Mr. Hutchinson says he has a belief that plain sections and separators lead to a more perfect filling of the sections; but he thinks the mere fact that the section is the same width all round, can not have a bearing on the question. Very true. I have tried several times to explain that I did not indorse any such notion; but still there are some who seem to believe that I claim that, because a section is plain, it will be better filled. As I point out elsewhere, a bee-way section can be made so it will be just as well filled as a plain one; but mark this — granting that both are equally well filled, a plain section will look the plumper, because the honey goes almost clear out to the edge of the wood. And then there is the fact that plain sections take less room in shipping-cases; take less lumber; and had it not been for the fact that lumber has advanced so sharply all over the country, they would probably have sold for less money than the beeway sections.

Referring to Mr. Daggett's statement, I would say that the average non separator case is very poorly adapted to securing good filling, for the reason that there are transverse partitions in the super. As Mr. Hutchinson points out, it is lateral communication that really is the factor in the matter. So I can't see that this argument has any weight as against plain sections.

THE NEW YORK FOUL-BROOD LAW AS RECENTLY AMENDED.

THE following, with reference to the passage of the foul brood law in New York, will explain itself:

Mr. E. R. Root:—I hand you herewith a copy of the New-York foul-brood law, recently passed by the legislature and approved by the Governor. After thoroughly canvassing the situation we were advised and concluded to amend the old law as we have done, believing it would be just as good and much easier to accomplish than the securing of an entirely new law. This conclusion, so far, has been justified in part in the fact that our bill amending the old law passed the legislature, was approved by the Governor, and became a law in just twenty days from the time it was introduced.

Although entitled an act *amending* Chapter 338, Laws of 1893, "relative to prevention of disease among bees," it is *practically* a *new law*, there being only four lines of the old law left (the first four lines, section 80).

On comparison you will find it embodies many desirable features of the celebrated Wisconsin law; those not embodied in the amendment are already provided for in Article I. Section 2 of this same chapter (338, Laws 1893, known as the Agricultural Law) which authorizes the Commissioner of Agriculture to *fix the compensation* of his agents and other persons employed by him, and "such *compensation* with their *necessary expenses shall be paid* on his certificate by the treasurer on the warrant of the comptroller," no matter whether such expenses are two dollars or two thousand dollars annually, more or less.

No *special appropriation* was necessary. This is an exception to your rule, page 233, where you say, "A law without these essential features is like the play of Hamlet with Hamlet left out." With us this was very important. Being a part of the agricultural law, a *special* appropriation was not necessary, and certainly not desirable if it could be avoided, as in this State the constitution requires that all appropriations must be paid *within* two years next after the passage of the Act; hence all appropriations must be *continued* or *revived* annually.

New York bee-keepers are grateful to all those legislators who aided in the passage of the bill; but to the Hon. Jean L. Burnett, of Canandaigua, N. Y., who introduced the bill, is due the credit for the prompt and successful manner in which it was passed.

Chapinville, N. Y., Apr. 15. W. F. MARKS.

(Chapter 223, Laws of 1899.)

AN ACT to amend chapter three hundred and thirty-eight of the laws of eighteen hundred and ninety-three, entitled, "An act in relation to agriculture, constituting articles one, two, three, four, five, six, seven, and eight of the general laws," relative to prevention of disease among bees.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Section eighty of chapter three hundred and thirty-eight of the laws of eighteen hundred and ninety-three, is hereby amended so as to read as follows:

§ 80 The prevention of diseases among bees.—No person shall keep in his apiary any colony of bees affected with a contagious malady known as foul brood; and every bee-keeper, when he becomes aware of the existence of such disease among his bees, shall immediately notify the commissioner of agriculture of the existence of such disease.

§ 2. Section eighty-one of said act is hereby amended so as to read as follows:

Sec. 81. Duties of the commissioner.—The commissioner of agriculture shall immediately, upon receiving notice of the existence of foul brood among bees in any locality, send some competent person or persons to examine the apiary or apiaries reported to him as being affected, and all the other apiaries in the immediate locality of the apiary or apiaries so reported; if foul brood is found to exist in them, the person or persons so sent by the commissioner of agriculture shall give the owners or caretakers of the diseased apiary or apiaries full instructions how to treat said cases. The commissioner of agriculture shall cause said apiary or apiaries to be visited from time to time as he may deem best; and if, after proper treatment, the said bees shall not be cured of the disease known as foul brood, then he may cause the same to be destroyed in such manner as may be necessary to prevent the spread of the said disease. For the purpose of enforcing this act, the commissioner of agriculture, his agents, employees, appointees, or counsel, shall have access, ingress, and egress, to all places where bees or honey or appliances used in apiaries may be, which it is believed are in any way affected with the said disease of foul brood. No owner or caretaker of a diseased apiary, honey, or appliances shall sell, barter, or give away any bees, honey, or appliances from said diseased apiary, or expose other bees to the danger of said disease, nor refuse to allow the said commissioner of agriculture, or the person or persons appointed by him to inspect said apiary, honey, or appliances, and do such things as the said commissioner of agriculture or the person or persons appointed by him shall deem necessary for the eradication of said disease of foul brood. Any person who disregards or violates any of the provisions of this section is guilty of a misdemeanor, and shall be punished by a fine of not less than thirty dollars nor more than one hundred dollars, or by imprisonment in the county jail for not less than one month nor more than two months, or by both fine and imprisonment.

§ 3. This act shall take effect immediately.

In view of the fact that there was already a special appropriation for contingencies of this kind, the law as amended is better than something after the Wisconsin measure. If I understand it, it all lies with the Commissioner of Agriculture, who *immediately*, upon complaint, *shall* appoint some competent person to investigate, with power to suppress the ravages of the disease. In the case of the Wisconsin law, the *majority* of the members of the bee-keepers' societies must ask the Governor to appoint some competent person.

The following, from Thos. G. Newman, will explain itself:

Mr. Root:—On page 299 of GLEANINGS for April 15 it is stated that I have made "demands" as a condition of amalgamation of the two Unions, and that these are never likely to be assented to by General Manager Secor, and there the matter rests, etc. This is *news* to me. I have never made *any* "demands" in that line, and *call for the proof.*

THOS. G. NEWMAN,

San Francisco, Cal., Apr. 24. General Manager.

Except a man be born again, he can not see the kingdom of God—JOHN 3:3.

Put ye on the new man, which after God is created in righteousness and true holiness.—EPH. 4:24.

The above texts were suggested by a kind letter that probably ought to go in the Roll of Honor, or letters from the veterans, as it comes from an old friend away off in Australia. The following is the extract:

Dear Mr. Root:—My dear friend—(allow me to call you so, at any rate, for this once), in this age of new lights, when the gospel of the three R's seems so very unfashionable, it often makes me exult and almost exclaim aloud to read in Our Homes the old-fashioned truth. Why, you absolutely believe in conversion—even believe men mus be born again! Go on, brother beloved in many lands by many hearts, and there will be a great ingathering at the harvest home.

Brisbane, Queensland, Feb. 2. J. G. CRIBB.

Yes, dear brother, I do believe in conversion, and it wrings my heart with anguish, sometimes, to see people treat the matter of becoming converted, and of uniting with the church, with such indifference as they often do. Now, I am not going to make a fling at the churches. It is quite common now, at least with some of the new sects, to criticise most severely the older denominations, and for certain ones to boldly invite people to break away from the church they are already connected with and come out and stand with them. I do not believe in this sort of doctrine. I do not believe it is the right thing for a man to put away his wife and try to get a better one. You all know that, without my telling you; and I have sometimes felt as if withdrawing from one church, that you may unite with another, was a good deal in the same line. If a man is united with a church, and is not living such a life as a church-member ought to, then let us rally around him, and have him put on the new birth right where he is. Let us get him to reform and put on the new birth, if it should transpire that he has never *been* born again.

The dear brother who writes the above kind words suggests that, away off on the opposite side of this earth of ours, the idea of conviction and conversion, with a change of heart and a change of life, is in danger of becoming old-fashioned. God knows there are many evidences that it is getting to be out of fashion on this side of the world. People unite with the church, and God knows I am glad to see them do so; but it often seems too much as if they were hiring out to work on a farm. They do not say any thing about a change of *heart*, or at most but very little, and we do not see any particular change in their *lives*. If they come to prayer-meeting they do not take part. They do not report progress and tell of their struggles with the adversary. Oh! but there *will* be struggles, dear brother and sister, if one stands out boldly and fearlessly before the world for Christ Jesus. There *must* be struggles; there must be fightings within and fightings without. Oh how I do long—yes, God knows how I do *hunger* and *thirst* to see or hear of the old-fashioned conviction and conversion!

I am going to talk considerably about tobacco to-day. May the Holy Spirit be with me to direct my poor efforts so they may do *good* and not *harm*. Church-members used to give up tobacco when they united with the church; but nowadays there does not seem to be much said about tobacco. Sometimes they give it up for a while, but pretty soon they go back to the use of it. While I write these lines I call to mind three different persons, friends of mine, who, through my efforts, gave up tobacco. After quite a lapse of time, say two or three years, each one of these three friends thanked me something like this: "Mr. Root, whatever happens I shall thank you, as long as I live, for having induced me to give up tobacco. My health is better; I am a better Christian, and I am ashamed now to think that I ever was such a slave to it." Well, the above is good, is it not? But, dear friends, if I let the truth all come out I must say that each one of these three is using tobacco to-day. One of them used to have a class of boys in Sunday-school. When he got to using tobacco again, his conscience reproached him so that, when standing before those boys as their spiritual teacher, he——gave up *tobacco?* No, no! He gave up the *Sunday-school class;* and I fear he has given up talking in the weekly Endeavor Society meetings as he used to do. Church-members who do not use tobacco are learning how to use it while they *are* church-members. In a recent number of the *Advance* it was suggested that the use of tobacco is on the increase among *ministers of the gospel!*

Now, lest somebody should say I am hitting a clip at other churches, and perhaps hinting indirectly that my own church is better in this respect, I think I had better say right out, that the cases I have mentioned were all among members of the Congregational Church; and, if I remember correctly, it was ministers of our own denomination who are using tobacco more lately than they used to do. If I am wrong, I hope that somebody who knows better will set me right.

Let me digress enough right here to ask the question, "Why do people begin to use tobacco when they know nothing about it and do not care for it?" Somebody ought to be able to answer this question. If I should make a guess I should say that nearly half of the men we meet are tobacco-users in some form or other. The drinking class all use tobacco as a matter of course. Then there is a large lot of other people who use tobacco—men of intelligence and culture. *Why* do they use it? Does your family physician use tobacco? The family physician ought to be the leader of community, not only in every thing that pertains to health, but in that which pertains to morals. Any doctor who is honest will tell you the harm that tobacco does to the health of our people; but even while he speaks against it he uses it himself. Our young men who go to college, and have grown up in Christian homes, a great many of them, sooner or later use tobacco. I have sometimes

thought that success in life—that is, success in a financial way—is almost always followed by the use of tobacco and the drinking habit. Can this really be true? Do men show their gratitude and thankfulness for prosperity and success by taking stimulants? "Lord, help!" In fact, this little prayer of mine has been welling up all along as I have gone over these things.

Some time ago I told you about the closets in our factory. I spoke about our beautiful Smead system. Well, the paint had hardly got dry on the blinds to each individual apartment before tobacco juice was squirted on these screens that were put up simply to secure privacy. If the vile stuff had been extruded in one spot we might have cleaned it up; but it was spattered all over the whitewashed wall, on the floor, and on the baseboards. We might have stopped it by dismissing every man in our employ who uses tobacco; and if the effect would have been good and not evil I would have done so, no matter if it had shut down our works temporarily. Please remember, our institution has been for years comparatively free from tobacco. Year after year this thing has gone on. At Ernest's suggestion I put some wooden boxes, half full of sawdust, where the greater part of the filth has piled up, and I began to feel quite light-hearted when I found most of the filth in said boxes. This morning I discovered a box had got pushed back a little out of sight by some means, and the filthy stuff was spattered on the doors and walls again. What shall I do? What would *Jesus* do? May be you think I am needlessly cranky on this matter. Perhaps you say it is one of the necessary evils we shall have to get along with as well as we can.

Somebody may ask, as did Nicodemus of old, "How can a man be born again?" In other words, what does it *mean* to be born again? Well, I am glad we have before us an excellent illustration of what it does mean.

You have not forgotten the story of Mr. Imler. I have taken pains to hunt up a great mass of facts in regard to this strange occurrence. Please remember I am not booming Dr. Dowie just now; for I am not sure but some of his uncharitable and severe censure is almost as bad as the use of tobacco. But I wish to give him the credit which he deserves. Mr. Henry W. Imler was a well-to-do business man in Fremont, Ohio. You see he was not very far away from us. He had used tobacco for more than fifty years, even to the extent of twelve or fifteen cigars a day. This comes from his own statement. In December, 1897, he was afflicted with a very bad tobacco cancer. He consulted the best physicians. They told him he could live only a few months unless the cancer was cut out; and I believe they also told him frankly that its location in the upper part of the mouth was such that he might not survive a surgical operation. When they found that he also used morphine in excessive quantities he was told he could not avail himself of the benefits of chloroform. He would have to be literally cut to pieces without getting relief from any anesthetic. Brother Imler was in a tight place.* He had been almost all his life a professing Christian. In his earlier years he was a victim of strong drink; but through faith in God he was enabled to break from the habit, and had not been a drinking man up to the time of his death. However, he held on to tobacco, and he got to taking morphine, for neuralgia, while in the army, in 1861. At the time he visited Dr. Dowie, the last of December, 1897, he was *really* in *trouble*. He was induced to go there by two friends of his who had been cured, as they claimed, of cancer by going to Dr. Dowie. Any one who cares to have the full particulars, at considerable length, can find the whole of it in periodicals published in different States about the time of the transaction.

Mr. Imler told Dr. Dowie his trouble. The doctor asked him a great number of questions. He told him they could not ask God's help in such an emergency unless he would promise to give up the use of tobacco and morphine. But many (or perhaps most) physicians would have said that, to break straight off from the use of both of these drugs at once would bring on insanity if not death. He used daily enough morphine at a single dose to kill three ordinary men. Dr. Dowie told him that God would lift him through the ordeal if he would but give himself, life and all, over into God's hands. Now, this should not be a very hard thing for a *Christian* to do. But Dr. Dowie probed a little further. Mr. Imler had some tobacco in his store; and the doctor told him that, before he could expect help, he would have to give up the traffic. Selling the stuff to somebody else to work mischief with would not do. It would have to be burned up. Furthermore, he would have to consent to stand out before the world in this whole thing. He would have to make a bonfire of his tobacco and cigars. He would have to do it out in the street, and invite people to see it. I think the doctor told him to invite the pastor of his church to be a witness, and pastors of other churches if he could get them to come. Mr. Imler, for once in his life, was called upon to bear a cross, and it had to be borne as the Master bore his cross in ages past. This bonfire had to be before the jeering multitude. All tobacco-users, and may be some other good people — yes, members of the churches, would call him a crank, and laugh at his infatuation. Now, Dr. Dowie did not tell him he could *not* be healed until after the

* Yes, he was in an exceedingly tight place. He had probably made vain attempts to break off from tobacco and morphine, in the years past. Now he was obliged to face the surgeon's knife; and this very surgeon, or council of surgeons, told him the outcome was doubtful. Now, do not think me harsh and uncharitable when I say that that surgeon, or council of surgeons, probably used tobacco. Very likely they would take a big chew before commencing the operation; and some surgeons, as I happen to know, add strong drink to brace up their nerves when they take a human life in their hands. There was no getting away from it. You can not run away from the toothache, and this was a thousand times worse than any toothache. Tobacco and morphine held him in iron chains, and the surgeon's knife confronted him. The long years of indulgence were coming to an end. Unless God helped him out of his terrible trouble there was no help.

tobacco was burned up. Mr. Imler was a good business man. His promise to make a public bonfire of his stock in trade, and renounce the use of the traffic in tobacco for ever was sufficient. Mr. Imler considered the matter, perhaps as a drowning man catches at a straw, and then he began to have faith.* No doubt his good sense told him it was a *sensible* thing for a professing Christian to do, whether he got well or not. He gave the promise; and, as you have already been told, the cancer dropped out in the night.

Now, at the same time his cancer dropped out we are told in a general way that he lost the appetite for both tobacco and morphine; but there was someting more than that I found out in regard to this transaction that was extremely interesting to me, inasmuch as it strongly corroborates the truth of this most remarkable occurrence. The night the cancer dropped out was one of acute and intense suffering. He was almost crazed with pain. He had to have watchers, as I take it, to prevent him from getting away and procuring morphine. At times he knew so little what he was doing that he was hardly responsible.

Now forgive me if I am guessing at some parts of the matter. When he found his sufferings from a lack of morphine almost unendurable, I think he went to Dr. Dowie again — perhaps several times. Dr. Dowie prayed for him as perhaps few men but himself could pray. Mr. Imler prayed also. The night *after* the cancer was taken away he slept soundly; and in the morning he said his appetite for morphine was gone; and for more than a year after this occurrence, as nearly as I can gather, Mr. Imler was a walking and talking evidence, not only that God *could* but that he *would* save us from the effects of our sins. Mr. Imler was a new man. He had really been *born again*, even in his old age; and he had got a very bright and vivid view of God's kingdom and of his righteousness. He was a new man in "righteousness and true holiness." Many people laugh at this. Why, one of the very best women in the world (I will not tell you her name) told me she did not believe it. I replied that this was no story of a "seance" in a dark room. The healing was in the presence of a great multitude. It reminds me somewhat of the miracle of the loaves and fishes. More than a thousand people heard Mr. Imler speak, and hundreds have listened to him since he got home. Nobody who has taken pains to investigate disputes the main facts in the case. I have heard it intimated somewhere that physicians explain a part of it by saying that tobacco cancers *do sometimes* drop out. If a man were to keep right on using tobacco "all the same," I do not know whether they would *stay* out or not.

Now, I know this whole paper has very much the appearance that I am putting in a plea for Dr. Dowie, but I am not. God is no respecter of persons. He is just as willing to hear our prayers as Dr. Dowie's. The doctor, after his long experience, has probably gained a great amount of faith; and, like any physician, his faith has a powerful influence over the patient. Dr. Dowie himself never healed any one. Nobody is more emphatic in this statement than he himself. It is *divine* healing. If you would break away from your sins, burn up your stock in trade of whatever is harming your fellow-men; make restitution to those whom you have wronged, as in the case above, and then you have just as much right to expect divine help as if you went to the expense of taking a trip to Chicago. Since what has appeared on this matter in GLEANINGS, a poor helpless woman, the mother of a large family in one of the extreme western States, has been induced to take Christ Jesus as her physician, and has been wonderfully healed.

Before closing let me give a word in regard to having the appetite for tobacco and morphine taken away. I have passed through an experience in a similar line, as some of you may know. An Oberlin professor once asked me a number of questions in regard to the matter. In my case the deliverance from bondage came about something in this way: When I was between 30 and 35, by staying from the churches, and, in fact, staying within a little narrow circle around my own home, I had become selfish and narrow minded. Very likely I am that way yet (but not so much so). Well, I was either helpless in the toils of Satan or I imagined I was. You may put it either way you choose. But many men commit suicide from the effect of just such imaginings. I was helpless and lost, or thought I was; and let me say once more it amounts to pretty much the same thing either way. I was letting my mind run on a trivial and foolish matter; and, oh dear me! is it not true that sin of *all* kinds is simply *folly?* When a man says he can not give up tobacco, and that, after having gone without it a whole year, he wanted it as bad the last day as he did the first, he is simply making a fool of himself, just as I made a fool of myself; and may God forgive me for that wretched piece of folly.

Well, like poor brother Imler I appealed to the great God above. I felt like saying as did Peter, "Lord, save or I perish." Now, from this point on my experience is unlike Mr. Imler's. I was alone. No human being was near. I knelt down in the darkness, and there promised the Lord to give up every thing, surrender every thing, change my business, change my life, if he would only give me back childhood's innocence and childhood's freedom from care and worry, or the

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* I can imagine that Imler's situation at this point would remind one of that grand old hymn:

Jesus, I my cross have taken,
All to leave and follow thee.

Few of us can comprehend the cross that Mr. Imler had to bear. Both tobacco and morphine had to be broken off at one "swoop," and, furthermore, he would have to go home and make that public bonfire. People who felt sorry for him because he had gone crazy would probably say as Judas did, "This two hundred dollars' worth of tobacco might have been sold, and the money given to the poor." Dear me! how thoughtful people are at times for the poor! They were going to start an open saloon here once in Medina, and use the money that it would bring into the town, to relieve the poor, fix up the streets, etc.!

burden of sin. The new birth began then and there and at that instant. I began to see humanity as God sees it. I began to hunger and thirst after righteousness. The thing that had been troubling me, when I first went down on my knees, with the change of heart that came then and there, dwindled into nothingness. Like a great flood that washes away and overwhelms landmarks, so my "old man" was obliterated; it was drowned out.

Now, then, dear friends, through the light of God's love this appetite for tobacco may dwindle into nothingness. You will be utterly ashamed of it, and smile to think you struggled and fought with such an insignificant thing; but this must come through the baptism of the Holy Spirit. When you are struggling to get above things of this kind there is nothing that can help you like Bible texts and Bible promises, [illegible] your Bible should be your daily and constant companion. Through the influence of this Bible your life work may go out to every corner of the earth; whereas without it you might have wasted your time and talents on a little bit of earth scarcely a rod square. Where a man is devoted to self only, and to the things of self, a rod square is room enough — in fact, too much; but where he is really seeking the kingdom of God and his righteousness, the whole wide world may be too *small* for him. I can readily understand how Mr. Imler came out absolutely free from the bondage of tobacco and morphine in two or three days — yes, with strength and life to stand up before the world and proclaim the gospel of Christ Jesus. I have been told that, when people are cured of the morphine habit by the gold cure, it takes weeks or months for them to get strength to do any thing without the stimulant. This may be the way with drug healing; but when God heals the *soul*, every faculty and every organ of the body very quickly responds.

Now, I would by no means say, with Dr. Dowie, that drugs and doctors are not needed; but I should want my medicines to be prescribed by a God-fearing physician, and I should greatly prefer one who does not use tobacco.

THE ANTI-CANTEEN LAW RECENTLY PASSED.

I presume there was general rejoicing among all Christians and temperance people throughout our land, when, after a prolonged fight, a law was passed that everybody supposed would, of course, put an end to the shameful and disgraceful sale of beer and other drinks to our soldier boys in the recent war. The intent of the law was certainly to abolish the whole business. Dr. Crafts, of Washington, D. C., who drew it up, and those who indorsed it in the Senate, so understood it, without question. There were debates enough on it, certainly, to make any thing plain and clear; but the enemy, finding they were beaten "out and out" by righteousness, temperance, and justice, have now the brazen audacity to so twist and misconstrue as plain a law as laws can be made, as to make it appear that it does not absolutely stop the thing. The Chicago *Advance* says: "As is well known, Secretary Alger was opposed to the liquor prohibition in the new law; and it was claimed that it was he who first suggested this new interpretation." Now, then, are the friends of righteousness, temperance, and purity going to sit down and let this infamous proceeding go on? Where is the patriotism and enthusiasm that rose with such vehemence when the news swept over the world that the Maine had gone down? When great officers in high places undertake with such audacity to defy law, order, and decency, is it not time for us to wake up *again?* We know that the rum power has been setting aside law and order in our great cities. Shall it continue to do this clear up to the head of our general government? Surely the President of the United States has something to say and something to *do* in a crisis like this.

THE CANNED ROAST BEEF, ETC.

Notwithstanding the fact that the samples Prof. Wylie got hold of in the general market all proved to be good, the evidence seems to be at present pretty strong that very poor meat in cans and out of cans was furnished to our soldiers. Now, if anybody has tried to speculate by furnishing poor meat to our boys who were sick, and away from home in a tropical climate, they certainly should be punished if there is *any* punishment for *any* culprit under *any* circumstances.

HAPPY SURPRISES.

At this date, April 21, we are having about the nicest April weather I ever saw; and we have not had a frost for almost two weeks. If this is not a happy surprise to others as well as to myself, it ought to be. It took me a long while to get over the effects of the grip. My strength seemed gone, and my enthusiasm seemed lacking, at least to a considerable extent. But I held on to the Bible promises, and kept asking, "Lord, what wilt thou have me to do during the remaining portion of life on earth thou hast given me?" For one thing, I began to feel that I should have to give up a good deal of the gardening business. It has been too much care, and, besides, possibly it takes my time from things that are of *more* importance than gardening.

The question then arose, "How shall I retreat in good order?" We do not run any wagon around town now, and, in fact, we do not sell very much at the groceries. There are other and younger men who need the business, and I do not wish to take the trade from them.

There are two things, however, that grow a spring crop of considerable value, even without planting, and almost no cultivation — asparagus and pie-plant. Right across the

road from the factory we have about 500 strong thrifty pie-plant roots. These roots must be sold or else we must sell the product for pies. Now, it is very much pleasanter to have purchasers call on you than to be obliged to call around on the purchasers. Sometimes in gardening we can manage this; but at other times we can not very well. I put a notice in two of our Medina papers, something like this: "Choice strong pie-plant roots for only a nickel each *if you will come and get them.* They are so big you will need to bring a wheelbarrow or wagon, if you want several; and if put right out now, each one of these great roots will furnish you material for pies this season, that will be worth several times the nickel the plant costs you." The papers were hardly out before people came along for the roots. In fact, Frank began to look troubled at the number of customers just when he was busy shipping potatoes, vegetable-plants, etc. Another thing, most of the customers seemed to think they could carry half a dozen roots in a half-bushel basket. When they found it needed a *wheelbarrow* to take just *one root*, then there was a "happy surprise" for the customer.

Well, I have just been figuring up this morning that it would be a pretty big investment to grow pie-plant roots for sale at the above price. It is true, it takes two or three years to grow good strong ones; and it takes a good pile of stable manure each year to keep them booming. But how many plants do you suppose you could grow on an acre with rows three feet apart and the plants 18 inches apart in the row? Why, there would be almost ten thousand There need not be any missing hills, for pie-plants rarely die; and when one is missing, just divide its neighbor and fill up your ground. Well, ten thousand plants at a nickel each would be $500; and I think that on market gardeners' ground you could get most of them so they would bring this price in about two years. By cutting the large roots in pieces, and transplanting them, you can get large roots a little quicker still; but it is more work than to sow the seed. With exceedingly rich ground, well underdrained and trenched, you can get nice stalks for pies the same year you sow the seed, for I have done it.

Now, my other happy surprise comes along in the line of selling strawberry-plants. You know I talked to you last year about my handsome plantation of strawberries with the plants only two feet apart from center to center. These were cultivated three different ways with the wheel-hoe; and the original idea was to keep the runners cut off. There was about half an acre of the patch. It was well manured before the plants were put out in the fall of 1897. Then old well-composted manure, broken up fine, was scattered all through the patch with wheelbarrows once or twice last season. In consequence of the strong manure and abundant rains last fall, the plants put out runners and covered the whole ground. It was not a matted *row*, exactly, but it was a matted *half-acre*. Well, these plants all wintered without any mulch whatever, and not a plant was lifted out by the frost. Why, the whole plantation looked more like a thrifty field of clover than a strawberry-patch. The problem this spring was to provide paths for the pickers; for the berries will probably lie almost touching each other all over the half-acre. More than half the plants are Brandywine and Wm. Belt.

Well, my pie-plant venture succeeded so well that I decided to try the same thing on strawberry-plants. I advertised in the county papers that, if people would come with baskets, and take the plants that were taken out in order to make paths for the pickers, they might have them at half the regular prices; and the thing is going on just as I write, in a way that makes it *another* happy surprise.

Where a path was wanted we stretched two stout cords. These cords are 18 inches apart. Then a man takes a sharp spade and cuts down along each cord. After this he takes a spading-fork and spades up a block of dirt, plants and all; then with a stout box to sit on (open on one side, about 16 inches square and 6 inches high), he, sitting astride the path, separates the plants from the dirt and puts them in the customer's basket. These plants are about the strongest and thriftiest I ever grew. Where they are too near together, of course there will be some small ones; but these small ones are thrown in without charge, and our customer can use them or not as he chooses.

Now, if all the plants *are* sold at half the advertised prices, our half-acre of strawberries will produce quite a round sum of money. But there has been a good deal of labor bestowed on it in the way of weeding, cultivation, etc. After the berries are picked, the whole patch will probably be plowed up and planted to potatoes; and with the amount of manuring it has had, I expect a wonderful crop of potatoes.

There has been a good deal of fault found in regard to fall planting; but this plantation was *all* made in the fall. The plants were, however, put in with a transplanter. They were manured and cultivated and weeded during one whole season — that is, last year. A small crop of extra-nice berries was taken from them last June. With this method of working strawberries they occupy the ground not quite two years. We would commence planting them, if the ground were vacant, in August, and in our locality the ground would be ready to put in a crop of potatoes about the first of July; so it would lack about one month of having the strawberries on the ground two years. Of course, I do not know what the crop before us is going to be. If the frost holds off I think we shall see something astonishing.

ORIGINATING NEW VARIETIES OF POTATOES, STRAWBERRIES, ETC.; PROF. W. J GREEN, OF THE OHIO EXPERIMENT STATION, TELLS US SOMETHING ABOUT IT.

Mr. Root:—In reply to yours of March 21, regarding the statement which you made on page 238, I think you have not stated the question too strongly. It is true that one may sometimes produce a superior seedling potato or strawberry, or any other kind of plant,

from a comparatively small number of seedlings: but to get something better than the varieties we already have, I think it is a very conservative estimate to say that we must grow 10 000 seedlings to get one that is an improvement over existing sorts. We have grown strawberry seedlings for years, and have thrown away a great many thousands, and yet have nothing to show for all of the work done, unless it may be that one which we now have on trial will come up to expectations. We have also raised a good many seedling potatoes, and some that were really good; but careful comparison with old varieties showed that we have not, as yet, produced anything worthy of dissemination. There is more than one side to this question, however. One can often produce a seedling quite as good as well-known varieties, and then there are particular strains, or families of varieties which, if one is fortunate enough to secure, is more likely to be successful than with the common run. We had several hundred seedling strawberries one year in a bed, and we noticed that, when this bed was picked, the berries were as fine as the best of the varieties in the variety patch alongside. I have heard Mr. Crawford say that he was almost sure to get good varieties from seedling strawberries. I think one is more sure to get something good if he crosses desirable varieties, and by careful trial one may find which varieties to cross to give the best results, although no one can be certain just what the result will be. He can simply be sure that certain crosses will produce better results than certain other crosses; and I believe that, when one begins to grow seedlings, he ought always to grow from seed that has been produced by systematic crossing, as he is more sure of getting good results in this way than by gathering seed at random. Last winter, at the State Horticultural Society, Mr. L. H. Read, of Wisconsin, had on exhibition a large number of varieties of potatoes grown from seed, nearly all of which were very fine. These examples do not prove, however, that one need have any reason to expect that he will get something superior to old varieties. It simply shows that, by careful work, he may get something good, and be almost sure of it, every time.

Wooster, O., March 28. W. J. GREEN.

We copy the following from our good friend Manum, who gave us the Enormous potato:

GROWING SEEDLING POTATOES.

Mr. A. I. Root:—In GLEANINGS, page 238, you make a request that I give your readers something of my experience in growing seedling potatoes. I will state that, in the past fifteen years, I have grown thousands upon thousands of seedlings, and of these thousands I found but *one* that I thought was really any better than what was already before the public. This one I introduced as "Manum's Enormous."

I find that in growing seedlings of any kind, whether potatoes, strawberries, raspberries, or blackberries, or even flowers of any variety, it is important that we have a base—a good foundation from which to start; that is, our chances of success will be far better if we take our seed from choice varieties.

I always aim to secure seed from stock that is as nearly an ideal variety as is possible to get. We would not think of breeding from a scrub cow, nor raising queens from worthless mothers; and no more should we think of saving seed-balls from undesirable potatoes.

I might spin out a long article in telling you of the different families of potatoes, for such do exist, as much as different families of cattle and sheep; and, as Mr. Terry once said regarding a new variety of potatoes, "Blood will tell." It is a fact, however, that one may grow hundreds of seedlings from seed taken from any of our very best varieties of potatoes, and yet not get one superior new variety; and then, again, we may get several good ones, though perhaps no better than many of our old well-known varieties. In the lot of seedlings from which I selected the Enormous I had an unusual number of good varieties.

My seedlings the third year from seed numbered 101, and the fourth year from the seed I selected five that were very promising. They were Nos. 1, 3, 4, 6, 9, No. 9 being the Enormous. No 1 was an excellent table potato—I think one of the very best I ever ate. Although they yielded heavily at first, they soon "went down," as the saying is, to an ordinary yielder. I plant a few each year, however, for seed-balls, as they are great ball-bearers. Nos. 3, 4, 6, were discarded as being no improvement on the old stock.

The next season I again raised several thousand seedlings, a portion of which I planted the second and third years, and finally discarded them all.

You will see, therefore, Mr. Root, that I have worked hard and faithfully for fifteen years, and thus far have succeeded in producing but one really desirable potato. I have at the present time 41 seedlings three years old — so many saved from hundreds thrown away last year. Among these 41 I have some very promising varieties, one in particular which promises to be extremely early. But that with the 40 others may have to be thrown overboard in one or two years. I have now, as is my custom at this season of the year, thousands of little seedlings up about two inches, and to-day I have been pricking them out in larger trays. I may get a good variety out of the lot, and I may not. There is one thing sure: I shall not *knowingly* introduce a new potato until I am quite sure that it is equal to or better than what we already have.

My experience with berries has not been as extended as with potatoes, corn, oats, and beans. In 1897 I transplanted 84 seedling strawberries, and all but one have been discarded. Six years ago I had 238 new beans. They were the result of cross fertilization by honey-bees. Of these 238 I have only one that proved to be desirable; but there are so many beans on the market I never offered it except once, and then the sales were so few that I gave it up.

It will be seen, therefore, that an originator's efforts are often rewarded with painfully small proportions of desirable varieties, if, in fact, he is fortunate enough to get that small proportion.

I have an acquaintance, Mr. A. Rand, who has grown seedling potatoes for many years, and who, by the way, is as well informed as regards the different varieties of potatoes and their origin as any man in America. He tells me, and I agree with him, that there are some families of potatoes that are incapable of producing seed from which a desirable variety of potatoes may be grown. It is, therefore, important that we get our seed from choice stock. Every year I test many of the new varieties offered for sale. I do this to test their quality and vitality; and if I find in them a desirable quality that seems to be more prominent than in some other choice variety, and if the flowers of this new variety furnish pollen (many varieties do not), I try, by cross-fertilization, to incorporate the good qualities of the one with the other. By this union I feel more sure of success with the seedlings that follow.

As intimated above, it is important that we have a good foundation upon which to start our building. With this in mind I use, as a base, varieties of the old Snowflake family, and try to improve upon that family by introducing new blood.

I am often asked how it is that my potatoes bear balls. To succeed in this I aim to plant ball-bearing varieties, and see to it that bugs do not destroy the flower-buds; for in the crown is where the tiny bugs begin their work of destruction.

In 1895 I gathered three bushels of balls, from which I saved one pound of seed; but we must remember that there are but few varieties that bear balls. Although our potatoes may blossom well, many of the flowering varieties produce pistillate or imperfect blossoms. They are not unlike strawberries in this respect.

I am aware I have made this article much too long, and yet I feel that I have but hinted at the various points which require further explanation.

There is one point which I wish to mention regarding new varieties, and that is, that it is very probable that some of the much-advertised new varieties are old varieties introduced under a new name. For instance, a year ago a man who has sold to seed houses several so-called new varieties, purporting to be of his own origin, wrote me, asking my price for a barrel of *very choice select* Enormous potatoes, stating that he wanted them to sell to a seed-house under a *new name*, and that the transaction would not hurt me in the least. I will simply state that "Mr. Man" did not get the potatoes. I never answered his letter.

Bristol, Vt., March 30. A. E. MANUM.

It is a little remarkable how well these two veterans in the business agree. Where we take chance seedlings, just as they happen, the chances are very small for getting any thing better than what the world has already. But where one goes to work with a definite end in view, selecting the best parents, availing himself of cross-fertilization, etc, then the work may amount to something. Mr. E. C. Green, a brother of the above writer, went to work in just this way to produce the Fancy

Fordhook tomato. Last season he had ripe tomatoes on the market from this variety before anybody else, and the plant stands up so well that it hardly needs staking, and can be grown much closer than ordinary tomatoes. Perhaps it might interest our readers to know that Burpee has given my neighbor Green a contract for furnishing 300 lbs. of seed the coming season. Friend G. is growing a nice lot of little plants in his greenhouse, and will have the tomatoes on the market again before anybody else. As long as he can get good prices for the fruit, he will sell *fruit;* but when the price drops, then his whole plantation will be devoted to the production of seed.

USING PARIS GREEN, BORDEAUX MIXTURE, ETC , IN A MORE CONCENTRATED FORM, WITH THE FAULTLESS SPRAYER.

One of the things that have made these little pumps spring into popularity so quickly is that you do not need to make your solution of any particular strength. A spoonful of Paris green or even more in a cupful of water answers all right, and the exceedingly fine mist or spray does not hurt the foliage. The following, which I clip from a recent copy of the *Rural New-Yorker*, covers the whole ground pretty thoroughly.

BORDEAUX MIXTURE IN A TIN CUP.

M. R. W., Bath, N. Y.—There is now on the market a small tin sprayer, "vapor-sprayer" sometimes called, holding about a quart. It is sold at hardware stores for 50 cts., and works well in putting Paris green on potatoes, requiring only a pailful of water to go as far as a barrelful would go if applied with a sprinkling pot or spray-pump. I have never used Bordeaux mixture on potatoes, because, having no spray-pump, it seemed like so big a job drawing so much water and applying it with a sprinkling-pot. Can the Bordeaux mixture be used in this small vapor-sprayer by mixing it enough stronger to make up for the smaller amount of water required?

ANS.—Last year one of the small vapor-sprayers was used here at the Cornell Experiment Station for spraying potatoes. Paris green was used in it as strong as four to six ounces of the poison to the quart of water contained in the sprayer; this very strong mixture did not injure the vines in the least. It would seem that this was using the poison unnecessarily strong; probably one or two ounces of the poison would kill the bugs just as surely. Bordeaux mixture was also used in the little vapor-sprayer. The Bordeaux was made more than twice as strong as one would apply it to fruit-trees; that is, at least 6 pounds of the sulphate of copper were used in about 20 gallons of water, and even stronger, without injury to the vines. As the spray from one of these vapor-sprayers is so very fine, the quart of mixture it contains will go a good way on an acre of potatoes. It was the experience here, however, that the sprayer was hardly equal to the task of spraying the vines when they got half or two-thirds grown. The sprayer was used only when the vines were very small, soon after they had come up. It thus seems to be perfectly feasible to use Paris green or Bordeaux mixture much stronger in these little vapor-sprayers than in ordinary spraying apparatus. These little machines are exceedingly useful tools in almost any business having to do with the growing of plants They are also very handy in applying insecticides to cattle or other stock infested with lice. The housewife will find them very useful among her house-plants in fighting red spider, plant lice, etc.

M. V. SLINGERLAND.

My brother used one last summer on his cow, and liked it very much. One push of the piston for each side of the cow will put on enough kerosene spray to last two or three days. J. S. HUNT.

Charlestown, N. H., April 14, 1899.